

Assessing work stressors, union support, job satisfaction and safety outcomes in the mining environment

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COMMENTS


The reader is reminded of the following:

- The editorial style of this manuscript follows the guidelines of the South African Journal of Industrial Psychology (SAJIP). The referencing in this mini-dissertation follows the format prescribed by the Publication Manual (6th edition) of the American Psychological Association (APA). These practices are in line with the policy of the Programme in Industrial Psychology of the North-West University (Potchefstroom) to use the APA style of referencing in all scientific documents as from January 1999.
- The mini-dissertation is submitted in the form of a research article.

DECLARATION

I, NWH Smit, hereby declare that **Assessing work stressors, union support, job satisfaction and safety outcomes in the mining environment** is my own work and that the views and opinions expressed in this work are my own and that of relevant literature references as shown in the reference lists.

Furthermore, I declare that the contents of this research study will not be submitted for any other qualification at any other tertiary institution.

A handwritten signature in black ink, appearing to be 'NWH Smit', written over a horizontal line.

NWH Smit

November 2014

DECLARATION FROM THE LANGUAGE EDITOR

DECLARATION FROM THE LANGUAGE EDITOR

I hereby declare that the dissertation **Work Stressors, Union Support and Safety Behaviour in the Mining Environment** by NWH Smit, was edited by me.



Dr Elsabé Diedericks

November 2014

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“Plant trees although you know you won't benefit from their shade.”

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SUMMARY

Title: Work stressors, union support and safety behaviour in the mining environment

Key words: Stress, role conflict, role overload, job insecurity, safety compliance, job satisfaction, safety motivation, safety behaviour, union support, mine workers.

The mining environment is one of the largest contributors to the South African economy and provides employment and a livelihood to many South African households. However; the mining environment is one of the most hazardous and production-driven environments in South Africa and worldwide, often leaving households without their primary provider, as a result of accidents.

The objective of this study was to investigate the relationship between work stressors, job insecurity, union support, job satisfaction and safety motivation and -behaviour, also to determine whether the levels of job satisfaction mediate the relationship between work stressors, job insecurity, union support and safety motivation and -behaviour. The role conflict scale (Rizzo, House, & Lirtzman, 1970), role overload (qualitative and quantitative) scale (Beehr, Walsh, & Taber, 1976; Sverke, Hellgren, & Öhrming, 1999), job insecurity scale (Hellgren, Sverke, & Isaksson, 1999), union support scale (Shore, Tetrick, Sinclair, & Newton, 1994), job satisfaction scale (Hellgren, Sjöberg & Sverke, 1997), safety motivation scale (Neal, Griffin, & Hart, 2000), safety behaviour scale (Neal et al., 2000) and a biographical questionnaire were administered to employees ($N = 260$) from the mining industry. A cross-sectional survey design was utilised. The scales demonstrated acceptable levels of internal consistency. Increased levels of work stressors and job insecurity were found to be associated with decreased levels of job satisfaction. Also, increased levels of perceived union support were associated with increased levels of job satisfaction and safety motivation and -behaviour. Finally, it was found that job satisfaction mediates the relationship between union support and safety motivation and -behaviour.

Recommendations were made to be applied in practice, as well as for future research.

OPSOMMING

Titel: Werkstressors, vakbondondersteuning en veiligheidsgedrag in die mynomgewing

Sleutelwoorde: Stres, rolkonflik, roloorlading, werksonsekerheid, veiligheidnakoming, werkstevredenheid, veiligheidsmotivering, veiligheidsgedrag, vakbondondersteuning, mynwerkers.

Die mynomgewing is een van die grootste bydraers tot die Suid-Afrikaanse ekonomie en voorsien werk en 'n bestaan aan menige Suid-Afrikaanse huishouding. Die mynomgewing is een van die mees gevaarlike en produksie-gedrewe omgewings in Suid-Afrika en wêreldwyd, en dikwels word die huishouding agtergelaat sonder hul primêre voorsiener as gevolg van ongelukke.

Die doelwit van die studie is om die verhouding tussen werkstressors, werksonsekerheid, vakbondondersteuning, werksbevrediging en veiligheidsmotivering en -gedrag te ondersoek, asook om te bepaal of die vlakke van werksbevrediging die verhouding tussen werkstressors, werksonsekerheid, vakbondondersteuning en veiligheidsmotivering en -gedrag medieer. Die rolkonflikskaal (Rizzo, House, & Lirtzman, 1970), roloorladingskaal (kwalitatief en kwantitatief) (Beehr, Walsh, & Taber, 1976; Sverke, Hellgren, & Öhrming, 1999), werksonsekerheidskaal (Hellgren, Sverke, & Isaksson, 1999), vakbondondersteuningskaal (Shore, Tetrick, Sinclair, & Newton, 1994), werksbevredigingskaal (Hellgren, Sjöberg, & Sverke, 1997), veiligheidsmotiveringskaal (Neal, Griffin, & Hart, 2000), veiligheidsgedragskaal (Neal et al., 2000), asook 'n biografiese vraelys is onder die werknemers ($N = 260$) in die mynindustrie afgeneem. 'n Kruisdeursneenavorsingsbenadering is gebruik. Die skale het aanvaarbare vlakke van interne konsekwenheid getoon. Verhoogde vlakke van werkstressors en werksonsekerheid het 'n verband getoon met verminderde vlakke werksbevrediging. Daar is ook gevind dat verhoogde vlakke van waargenome vakbondondersteuning 'n verband getoon het met verhoogde vlakke van werksbevrediging en veiligheidsmotivering en -gedrag. Ten slotte is gevind dat werksbevrediging die verhouding tussen vakbondondersteuning en veiligheidsmotivering en -gedrag medieer.

Aanbevelings vir toepassing in die praktyk, asook vir toekomstige navorsing is gemaak.

CHAPTER 1

INTRODUCTION

Introduction

The purpose of this mini-dissertation is to establish the relationship between work stressors, job insecurity, union support, job satisfaction and safety motivation and -behaviour of a selection of workers in the mining industry in South Africa. This chapter consists of a problem statement, and an overview of previous empirical research done on role stressors, job insecurity, union support, job satisfaction and safety motivation and -behaviour from a mining industry perspective. An explication of the research questions, research objectives and research hypotheses is given, followed by a discussion of the research methodology. Lastly, the layout of the chapters and a summary of this chapter will be given.

1.1 Problem statement

The mining industry is one of the major role players in the South African economy. This industry is a significant source of employment globally and especially in South Africa. However, the mining industry can be seen as one of the most hazardous and physically demanding work environments; it is a production-driven environment where employees are working under constant pressure, strict deadlines, and zero tolerance for violations of safety behaviour (Paul & Maiti, 2005). In this type of scenario it is of utter importance that every possible feature and compliance are in place, to ensure that this industry will keep on providing jobs and contribute to the economy (Rao, 2007). According to Statistics SA (2012), the mining industry provides over 336 000 employment opportunities, making this industry the largest contributor to employment in South Africa.

According to the Health and Safety Executive (2008), there are hundreds of serious work-related accidents in Britain every year which amount to 150 000 fatal and lost time injuries at work. Magretta (2002) believes that there are two main reasons for accidents and injuries in work environments: human error, and management failing to prevent accidents and injuries. These findings are in line with the statement of Cronje (2010), who found that 9% of all accidents or injuries are due to human error, 88% due to violation of safety regulations and 3% due to acts of God. Work-related accidents and injuries can cause great loss for family, friends and also colleagues. An unpleasant thought of not returning to work or returning from

work without a limb or with an illness can be daunting. Being safe in the workplace is a great concern for most employers in organisations (Bennet, 2002). Macintosh and Gough (1998) state that health and safety in the workplace has become one of the most integral components regarding the viability of mining companies for employers, unions, and governments in general. In the light thereof, the field of safety has gained considerable research activity in the past decade, emphasising the importance of safety in different industries and organisations, especially the mining industry. Organisations should grasp that better safety performance by employees will lead to higher production, a good corporate image and fewer work disruptions due to a smaller number of accidents (Feng, 2013).

In a similar vein, job satisfaction in the workplace has generated considerable interest among researchers globally (Tsutsumi, 2005). One of the pioneers on job satisfaction research, Edwin Locke, defined the term as “a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences” (Locke, 1976, p. 1304). Although some findings on the effect of job satisfaction have been contradictory, there seems to be a general consensus that it holds several advantages for organisations. These advantages include, amongst others, reductions in turnover and absenteeism (Clark, 2001; Clegg, 1983; Pergamit & Veum, 1989); a more productive workforce (Clark, 2001; Souza-Poza & Souza-Poza, 2000; Wright & Cropanzano, 2007); and improved health and safety of employees in the workplace (Tsutsumi, 2005). Job satisfaction is often referred to as a multifaceted construct that mainly functions on two aspects. Firstly, it is dispositional, considering the role of employees’ personality traits in the workplace and secondly, it is situational, taking into account the work environment of the employees (Brief & Weiss, 2002; Dormann & Zapf, 2001; Judge, Bono, & Locke, 2000). Job satisfaction is often used as an evaluative measure of employees’ emotional reaction towards their job and, as a result, it also tends to be an accurate indicator of their working conditions (Judge, Hulin, & Dalal, 2009; Judge et al., 2000). According to Brief and Weiss (2002), industrial accidents as well as injuries on sites could therefore be mediated by workplace conditions and job satisfaction.

In order to explain the effect of workplace conditions on job satisfaction and safety behaviour, one has to consider the Job Demands-Resources theoretical framework (JD-R model). According to the JD-R model, organisational climate is determined by two factors, namely job demands and job resources (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Job demands require effort and are associated with physiological and psychological costs;

whereas job resources are “the physical, social, or organisational aspects of a job that (a) are functional in achieving work-related goals; (b) reduce job demands and the associated physiological and psychological costs; and (c) stimulate personal growth and development” (Demerouti et al., 2001, p. 501). These job demands and resources evoke two relatively independent psychological processes, namely the health impairment process and the motivational process (Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003).

The health impairment process states that employees’ sustained effort is needed to deal with high job demands which may consequently drain their resources and lead to energy exhaustion, ultimately impacting their health (Caplan, Cobb, French, Harrison, & Pinneau, 1975). For example, researchers who have conducted studies among several occupation groups have found that certain job demands, such as work stressors and job insecurity, are highly correlated with exhaustion (Bakker, Demerouti, & Euwema, 2005; Sonnentag, Kuttler, & Fritz, 2010; Sverke, Gallagher, & Hellgren, 2002; Viljoen, 2004). On the other hand, the motivational process states that the accessibility of job resources may lead to employees being more engaged and satisfied with their work (Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003; Schaufeli & Bakker, 2004). Additionally, Nahrgang, Morgeson, and Hofmann (2011) describe the health impairment process and the motivational process as ways in which job demands and resources relate to safety outcomes. In this particular study attention will be given to the relationship between work stressors, job insecurity (presented as job demands), union support (regarded as a job resource), and outcomes such as job satisfaction and safety motivation and -behaviour.

Work stress is a serious phenomenon that refers to any characteristic within the workplace that can be a threat to employees (Karimi, Omar, Alipour, & Karimi, 2014). Stress is defined by Kreitner & Kinicki (2010) as “an adaptive response, mediated by individual characteristics and/or psychological processes that is a consequence of any external action, situation, or event that places special physical and/or psychological demands upon a person” (p. 555). Some of the most common work-related stressors, according to Lambert, Hogan, Paoline, and Clarke (2005), are role conflict and role overload. Rosen, Chang, Djurdjeic and Eatough (2010) state that role conflict occurs when an employee is required to perform a role with mixed or incompatible requirements set by his or her supervisors. Whereas, role overload refers to employees’ inability to fulfil their assigned responsibilities, because their role

expectations exceed the available time or resources (Bacharach, Bamberger, & Conley, 1991).

Work stressors have become a well-known construct in the literature of job satisfaction. In a study conducted by Malik, Waheed and Malik (2010), it was found that both role conflict and role overload are negatively related to job satisfaction. A possible explanation for the relationship may be that employees with higher perceived levels of role conflict and role overload may experience increased levels of stress, consequently causing them to feel less satisfied with their job (Singh, 1998). The following hypothesis can therefore be formulated:

Hypothesis 1a: Role stressors will be negatively related to job satisfaction.

Similarly, Clarke (2012) conducted a study where results indicated that employees who experienced less role conflict and role overload complied significantly more with safety rules and regulations and safety-related activities than those with high work stressors. High work stressors have also been found to be correlated with increased levels of occupational injuries and near-misses (Clarke, 2012). It seems crucial to investigate the role between work stressors and safety motivation and -behaviour. Therefore, the next hypothesis is formulated:

Hypothesis 1b: Role stressors will be negatively related to safety motivation and -behaviour.

The occurrence of job insecurity has been around for over half a century. Although back in the 1950s the importance thereof was not as great as it is in this day and age. According to Greenhalgh and Rosenblatt (2010), the lack of importance back then was due to employees who felt confident in having a sustainable career in their organisation. Change is not an unknown phenomenon; change can be good, but in organisations it often transpires in the form of restructuring and downsizing. The constant improvement of technology can be the cause of the downward spiral in an intensive labour demand. Worldwide, rising competition is forcing organisations to lower their input costs in order to gain a competitive advantage (Greenhalgh & Rosenblatt, 2010). Job insecurity is defined in several ways; however, no agreement on an overarching definition has been reached (De Witte, 1999; Kinnunen, Mauno, Nätti, & Happonen, 2000; Reisel, Probst, Swee-Lim, Maloles, & Koning, 2010). As cited in Greenhalgh and Rosenblatt (2010), the original definition was described by

Greenhalgh and Rosenblatt (1984) as “the perceived powerlessness to maintain the desired continuity in a threatened job situation” (p. 438).

Current global economic recessions, technology enhancement, downsizing, employee layoffs, organisational stream lining and competitive advantage are well-known concepts in the corporate world (Purcell & Purcell, 1998). This magnifies the working conditions that are seen more often daily, including part-time employment, contracting and outsourcing (Goslinga & Sverke, 2003). According to Gallagher and Sverke (2000), there are two types of workers: employees with the traditional employment contract (permanent), and then employees with the more non-permanent contracts (temporary). Today, organisations often make use of labour brokers when employing workers on short or fixed-term contracts, instead of employing them permanently. This trend has a major influence on an employee’s perception of job security (McLean Parks, Kidder, & Gallagher, 1998; Sverke et al., 2000).

Job insecurity has been related to several undesired organisational outcomes, such as decreased levels of job performance, organisational commitment, physical and mental health, job satisfaction and, finally, increased work withdrawal behaviours, absenteeism and turnover intention (Ashford, Lee, & Bobko, 1989; Cheng & Chan, 2008; Probst, 1998; Sverke et al., 2002). In an investigation by Kaiser (2002) on different types of employment and job satisfaction, several types of employee contracts such as full-time permanent, full-time fixed-term, part-time permanent, part-time fixed-term, and self-employment were explored. Results suggested that workers who had permanent contracts and those who were employed part-time showed the highest levels of job security and job satisfaction. In contrast, employees with fixed-term contracts and those who were self-employed indicated lower levels of job security and low job satisfaction. The following hypothesis is therefore expected to be confirmed:

Hypothesis 2a: Job insecurity will be negatively related to job satisfaction.

Previous research linked job insecurity to lower levels of safety behaviour, a stronger tendency to take risks at work, increased rule-breaking behaviour and an increase in the number of accidents and fatalities (Probst & Brubaker, 2001, Probst, 2002; Storseth, 2007). Similarly, Probst (2004) found that employees who experience lower levels of job insecurity tend to underreport accidents. The reason, according to Probst (2004), may be that employees fear putting themselves in a worse position, consequently leading to dismissal. These findings

suggest that employees who experience high job insecurity will exhibit low safety motivation and behaviour (Quinlan, 2005). Therefore, the following hypothesis is formulated:

Hypothesis 2b: Job insecurity will be negatively related to safety motivation and -behaviour.

Unions play an important role in the South African economy (Armstrong & Steenkamp, 2008), particularly amongst workers from the mining industry. The role of unions is to protect their workers from potential unethical treatment and to make sure that they are treated in a fair and humanistic way (Goslinga & Sverke, 2003; Hellgren & Chirumbolo, 2003). Furthermore, unions' purpose inside organisations is to improve employees' welfare and satisfaction through changes in the work environment and wages. Researchers have become increasingly interested in the relationship between union support and job satisfaction.

Literature suggests that union membership has a positive relationship with wages; however, it has been found to have a negative impact on job satisfaction (Blanchflower & Oswald, 1999; Drakopoulos & Theodossiou, 1997; Freeman & Medoff, 1984.). On the other hand, Berger, Olson, and Boudreau (1983) suggested that union membership and job outcomes such as workers' remuneration, job security and job structure are positively related with one another. Thus, when factors such as wages and employee benefits are taken into consideration; the negative impact of unionisation on job satisfaction decreases (Lange, 2009). Further evidence of the positive relationship between union support and job satisfaction is provided by Delp, Wallace, Geiger-Brown, and Muntaner (2010). These authors suggest that union members who are actively engaged, experience unions as instrumental and emotionally supportive; furthermore viewing unions as a mechanism (representing the employee) towards making decisions regarding work policies which consequently result in job satisfaction. Bender and Sloane (1995) furthermore emphasised that the aim of unions is to change working conditions that are poor, and in doing so, employees consequently feel more satisfied with their job.

Hypothesis 3a: Union support will be positively related to job satisfaction.

Health and safety issues in the mining industry are complex, as are issues in union and non-union establishments. Workers employed in the mining industry may, as a result of the nature of their employment, have numerous employers each year. Consequently, they have to regularly change between several work sites and environments. Therefore, they accept

primary responsibility for their own safety (Ringen, Seegal, & Englund, 1995a). Research done by Dedobbeleer, Champagne, and German (1990) revealed that union workers differed quite dramatically from non-union workers in their perception of a safety climate. Union members viewed the safety climate at their worksites more favourably (Suruda, Whitaker, Bloswick, Philips, & Seseck, 2002). This can be explained due to the fact that unions critically enforce safety policies. This may also occur through more formal training, introduction of safety language into contracts, and the tendency for large mining sites to be more vigorously monitored by procedures according to the Occupational Health and Safety Act. These same forces also tend to encourage managers at union mining sites to be more compliant with occupational health and safety regulations (Ringen, Englund, Welch, Weeks, & Seegal, 1995b; Weil, 1992). Therefore, the following hypothesis is formulated:

Hypothesis 3b: Union support will be positively related to safety motivation and -behaviour.

It is often questioned whether job satisfaction predicts a safe work environment, or a safe work environment predicts job satisfaction. Most researchers in the field of safety literature agree that job satisfaction usually transpires first, demonstrating that those employees who are satisfied at work are often safe employees; whereas safe employees are not necessarily satisfied with their work. It is evident from former literature that increasing employee job satisfaction is crucial when attempting to eliminate physical hazards in the workplace. A theory frequently used to understand the relationship between job satisfaction and positive organisational behaviours, such as safety compliance, is the Social Exchange Theory (Blau, 1964). According to this theory, expressions of positive affect (caused by job satisfaction; Witt, 1991) create feelings of gratitude and an equivalent obligation to react positively in return. Therefore, when employees perceive high levels of organisational support, they most often feel satisfied with workplace conditions and may in return feel a need to reciprocate in a way that is beneficial to the organisation (Blair, 1999).

Hypothesis 4: Job satisfaction will be positively related to safety motivation and -behaviour.

Previous literature suggests that some of the effects of work stressors, job insecurity, union support and organisational outcomes, such as safety behaviour, may be mediated by the level of employees' job satisfaction (Probst & Brubaker, 2001; Richter, 2011; Yousef, 2002). Employees, who are under pressure to perform, often get caught in a descending spiral where

they are expected to increase their efforts in order to meet escalating expectations, with no equivalent increase in their job satisfaction. The requirement to constantly perform optimally has a significant impact on job dissatisfaction, impacting on reduced efficiency and performance, and employees' safety behaviour (Canadian Mental Health Association, 2012). Likewise, in a study done by Richter (2011), decreased job satisfaction was found to be a mediating variable between job security and decreased safety behaviour. Furthermore, in a study conducted on the relationship between job insecurity and safety knowledge, safety motivation and reported safety compliance results indicated that job satisfaction was an intervening factor (Probst & Brubaker, 2001). Similarly, actively engaging union members may experience their union as a provider of emotional support, while also regarding it as a way to exercise influence over important policy decisions (on their behalf), resulting in higher job satisfaction; consequently leading to increased safety compliance (Bender & Sloane, 1995). Finally, the following hypothesis is formulated:

Hypothesis 5: Job satisfaction will mediate the relationship between job insecurity, role stressors, union support and safety motivation and -behaviour.

Although extensive research has been carried out on organisational outcomes such as job satisfaction and safety motivation and behaviour, research taking work stressors, job insecurity and union support within a South African mining context into account is relatively unexplored. The aim of this study is to investigate the above-mentioned relationships. The interrelationship between work stressors, job insecurity, union support, job satisfaction and safety motivation and behaviour relevant to this study can be best described using the following diagram (next page):

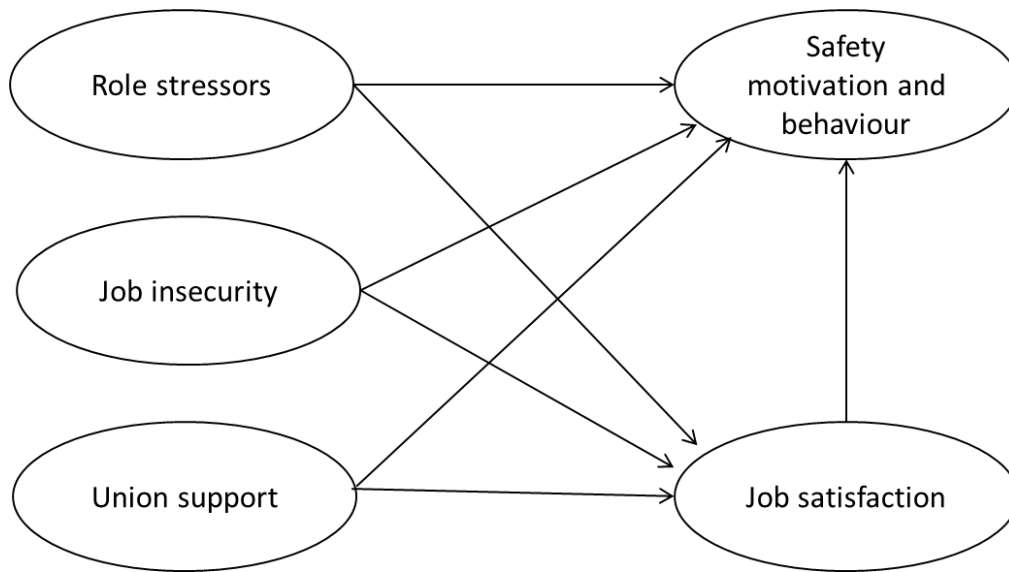


Figure 1. The hypothesised research model

Based on the above research problem, the following research questions are formulated:

- What is the relationship between role stressors, job insecurity, union support, job satisfaction and safety motivation and -behaviour in the mining environment, according to literature?
- What is the relationship between role stressors, job insecurity, union support, job satisfaction and safety motivation and behaviour within the South African mining environment?
- Does job satisfaction act as a mediator in the relationship between role stressors, job insecurity, union support and safety motivation and behaviour?; and
- What recommendations could be made to organisations and future research?

1.2 Expected contributions of the study

1.2.1 Contribution to the Individual

Mining workers often depend on health and safety representatives to foster a safe work environment. This study will aim to make employees aware of their role and responsibility in actively participating in promoting safety and sustainability in the workplace. It will investigate the role of employees' work stressors, level of job insecurity and perceived union support, making them aware of how these factors influence their levels of job satisfaction and

safety motivation and -behaviour. Furthermore, the study will aim to help individuals obtain knowledge on the positive outcomes of a safe workplace, such as fewer injuries, illnesses and fatalities. Research findings may therefore result in highly effective practices to improve employee health, safety and well-being.

1.2.2 Contribution to the Industry

This study will assist mining organisations to obtain a better understanding of how to proactively attend to certain safety matters. Having a better understanding of the work stressors that predict safety motivation and -behaviour will enable mining organisations to collaborate with their employees in creating a safer work environment. This study will also provide insight into the influence of union support on job insecurity and job satisfaction. When safety managers intervene with intervention plans and strategies to ensure better and safer work conditions, it may also have positive outcomes, such as increased work engagement, higher commitment levels, better performance, and reduced turnover; ultimately contributing to the country's economy and GDP.

1.2.3 Contribution to the Industrial/Organisational Literature

Although safety in the mining industry has been investigated in recent years, the field is still relatively new and unexplored. Several studies have explored the role of work stressors, job insecurity and union support on job satisfaction and safety motivation and behaviour, in isolation. The combination of these factors have, however, is rather unfamiliar internationally and especially in South Africa. The challenge the mining industry is facing requires research and effective implementation of the research findings.

1.3 Research objectives

The research objectives are divided into the following, namely a general objective and specific objectives.

1.3.1 General objective

The general objective of this study is to investigate the relationship between work stressors, job insecurity, union support, job satisfaction and safety motivation and -behaviour in a sample of mine workers in South Africa.

1.3.2 Specific objectives

The specific objectives of this study are to:

- Determine the association between work stressors (role stressors, job insecurity), union support, job satisfaction, safety motivation and safety behaviour in the mining environment, according to literature;
- Determine the relationship between role stressors, job insecurity, union support, job satisfaction, safety motivation and safety behaviour in the mining environment amongst a group of South African mine workers;
- Determine if job satisfaction acts as a mediator in the relationship between work stressors, job insecurity, union support and safety motivation and safety behaviour; and
- Make recommendations to organisations and for future research.

1.4 Research Hypotheses

The following hypotheses are formulated:

H_{1a}: Role stressors will be negatively related to job satisfaction.

H_{1b}: Role stressors will be negatively related to safety motivation and -behaviour.

H_{2a}: Job insecurity will be negatively related to job satisfaction.

H_{2b}: Job insecurity will be negatively related to safety motivation and -behaviour.

H_{3a}: Union support will be positively related to job satisfaction.

H_{3b}: Union support will be positively related to safety motivation and -behaviour.

H₄: Job satisfaction will be positively related to safety motivation and -behaviour.

H₅: Job satisfaction will mediate the relationship between role stressors, job insecurity, union support and safety motivation and -behaviour.

1.5 Research method

The research method consists of two phases, namely a literature review and an empirical study. The results are presented in the form of a research article. A literature review is conducted to gain insight into previous research done on the relationship between work stressors, job insecurity, union support, job satisfaction and safety motivation and behaviour of mine workers in South Africa.

1.5.1 Literature review

In the review of literature the most recent resources will be used as far as possible. The following scientific research engines will be used to make sure that valid, reliable, and peer-reviewed information from previous and current research regarding the constructs are found: Google Scholar; Science Direct; SAePublications; and EBSCOhost. Journals such as the following will be consulted on these databases: *Journal of Applied Psychology*, *Journal of Occupational and Organizational Psychology*, *Applied Psychology: An International Review*, *Accident Analysis & Prevention*, *International Journal of Risk Assessment and Management*, *European Journal of Work and Organizational Psychology*, *Journal of Organizational Behavior*, *Labour Economics*, *South African Journal of Industrial Psychology* and *Journal of Occupational & Organizational Psychology*.

1.5.2 Research design

A quantitative approach is followed in this study. According to Struwig and Stead (2001), quantitative research is based on larger samples of participants and structured to a certain extent by measuring the constructs of the study utilising a survey questionnaire. An electronic and paper-and-pencil version of the survey is implemented. The questionnaire is composed of items measuring the constructs that were introduced in the literature study. The different constructs are measured simultaneously and at one specific time; making the broader approach cross-sectional in nature (Salkind, 2009).

1.5.3 Research participants

The participants that are involved in this study are employees from the mining industry ($N = 260$). A convenience sampling method is used, making use of people who are most easily accessible for participation on a voluntary basis. More specifically, the sample aimed at comprising numerous employees such as shift bosses and supervisors; each overseeing a number of employees and dealing more hands-on with unions and safety behaviour of their employees on a daily basis. The sample group represents the iron ore open cast mining industry of South Africa.

1.5.4 Measuring instruments

Biographical questionnaire: The biographical questionnaire consists of information regarding age (year of birth), race, language, gender, job title, education, employment status, work experience, and union membership.

Role stressors: Role stressors were measured by items from the following scales: role conflict, role clarity and role overload. *Role conflict* has four items. This scale was originally invented by Rizzo et al. (1970). An example item of this construct is ‘*I receive incompatible requests from two or more people*’; measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree) ($\alpha = 0.82$; Rizzo et al., 1970). *Role clarity* contains items regarding the clear understanding of the roles and responsibilities of the employee, e.g. ‘*I know exactly what is expected of me on a daily basis*’ (Rizzo et al., 1970), measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Previous reliability for this scale has been deemed acceptable ($\alpha = 0.71$; Masia & Pienaar, 2011). *Role overload* comprises seven items (three qualitative and four quantitative), measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The quantitative role overload scale is based on how the employees experience their work load (Beehr et al., 1976). The work load is typically measured against their time, for example, not enough time compared to their amount of work. An example item of this construct is ‘*I am given enough time to do what is expected of me in my job*’. Previous research internationally and in South Africa has indicated lower coefficients than the acceptable parameters ($\alpha = 0.56$; Beehr et al., 1976; $\alpha = 0.59$; Pienaar, Sieberhagen, & Mostert, 2007). A typical approach in such instances is to collapse the qualitative and quantitative dimensions of role overload into one, total overload scale.

The qualitative role overload scale contains items based on how the employees experience the difficulty of their job, whether or not it is too demanding (Sverke et al., 1999). An example item of this construct is '*I feel unreasonable demands in my work*'. Acceptable reliability was found both internationally and in South Africa ($\alpha = 0.78$; Sverke et al., 1999; $\alpha = 0.77$; Pienaar et al., 2007).

Job insecurity: The job insecurity scale (JIS) was developed by Hellgren, Sverke and Isaksson (1999). The scale consists of seven items (three qualitative and four quantitative), measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The quantitative items measure future uncertainty and worry of employees regarding their employment. An example item of this construct is '*I am worried about being able to keep my job*'; whereas the qualitative focus is on whether individuals are worried about losing important aspects in their job. An example item of this construct is '*I worry about getting less stimulating work tasks in the future*'. In previous research done in South Africa by Fourie (2005), it was found that the alpha reliability coefficients of both qualitative and quantitative job insecurity are 0.75 and 0.82 respectively.

Union support: The union support scale is that of Shore et al. (1994). An example item of this construct is '*I can always call upon my union with questions or problems*'; measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). In previous research acceptable reliability on union support was found internationally ($\alpha = 0.72$; Goslinga & Sverke, 2003).

Job satisfaction: The job satisfaction scale consists of three items, developed by Hellgren, Sjöberg and Sverke (1997). An example item of this construct is '*I am satisfied with my job*'; measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Both internationally and in South Africa acceptable reliability was found for this scale ($\alpha = 0.86$; Hellgren et al., 1997; $\alpha = 0.80$; Pienaar et al., 2007).

Safety motivation and -behaviour: The safety motivation and -behaviour scales were developed by Neal, Griffin and Hart (2000). The motivation scale consists of four items and investigates the extent to which employees believe health and safety is an important issue in the workplace. An example item of this construct is '*I believe that workplace health and safety is an important issue*'. Whereas, an example item of a safety behaviour item is '*I carry*

out my work in a safe manner’; all items are measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Acceptable reliability scores ranging from 0.85 to 0.93 were obtained for both safety motivation and -behaviour scales in previous studies (Neal et al., 2000).

1.5.5 Research procedure

Permission will be obtained to implement a project at the mining locations. At first, an email regarding the importance of the study is sent to the participants explaining what the questionnaire is all about, the confidentiality regarding the assessment, that participation will be voluntary, fair, and that withdrawing participation at any moment will be without any negative consequences. The survey will be sent electronically to the shift bosses and supervisors that will participate in the study. All of them have an email account, and will receive a link to the questionnaire which they should voluntarily complete. In certain areas where employees don’t have access to computers, paper-and-pencil surveys will be utilised. After the information has been collected through the electronic and paper-and-pencil surveys, data will be captured in a Microsoft Excel-spread sheet that is appropriate for the next step, the statistics.

1.5.6 Statistical analysis

The statistical analysis will be performed by using structural equation modelling (SEM) methods in Mplus 7.2 (Muthén & Muthén, 2014). The first step is to determine the fit of the measurement model, and only then will regressions in the structural model be specified. The following fit indices will be considered: Comparative Fit Index (CFI: acceptable fit ≥ 0.90), Tucker-Lewis Index (TLI: acceptable fit ≥ 0.90), and the Root-Mean-Square Error of Approximation (RMSEA: acceptable fit < 0.08) (Van De Schoot, Lugtig, & Hox, 2012). The correlation matrix will assist in providing information regarding the different relationships between the variables. The beta coefficients will be used to determine the strength and direction of the relationship paths in the structural model. Statistical significance is set at the 95% level ($p \leq 0.05$). Furthermore, the practical effect size of correlations for medium and large practical significance will be considered at 0.30-0.49 (medium), and >0.50 (large) (Steyn, 1999).

1.5.7 Ethical considerations

Ethics is an important aspect of research. The following qualities are imperative for research to be viewed as fair and ethical. According to Salkind (2009), participating individuals need to be protected from physical and psychological harm; all the information must be kept confidential, maintaining privacy through anonymity; participants cannot be forced to participate in a study; and informed consent is needed from all individuals. The study was approved by the research committee of the School for Economic and Management Sciences of the North-West University, Potchefstroom Campus. Salkind (2009) also mentioned that debriefing and sharing benefits with the voluntary participants are very important for the success of the research study. Feedback will be given to the organisation and participants.

1.6 Overview of the Chapters

Chapter two will present and discuss the findings of the empirical study with regard to the research objectives in the form of a research article. Chapter 3 includes the conclusions, limitations and recommendations for future research and based on the current research study.

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CHAPTER 2

RESEARCH ARTICLE

Assessing work stressors, union support, job satisfaction and safety outcomes in the mining environment

Abstract

Orientation: The study of work stressors (role stressors, job insecurity) and union support creates opportunity for mining organisations to manage job satisfaction and safety motivation and -behaviour more effectively.

Research purpose: The objective of this study was to investigate the relationship between work stressors, union support, job satisfaction and safety motivation and -behaviour of a sample of mine workers in South Africa.

Motivation for the study: The mining industry is often faced with hazardous and physically demanding working environments, where employees work under constant pressure. Work stressors, job insecurity, union support and job satisfaction are considered key variables when investigating effective means of managing safety in a mining environment.

Research design, approach and method: A cross-sectional survey design was utilised to collect the data. The survey was administered to a convenience sample of employees in the mining industry of South Africa ($N = 260$). Descriptive statistics, correlations, structural equation modelling and bootstrapping resampling analysis were used to analyse the categorical data.

Main findings: Higher levels of work stressors and job insecurity were found to be associated with low levels of job satisfaction. Conversely, higher levels of perceived union support were associated with higher levels of job satisfaction and safety motivation and -behaviour. It was also found that job satisfaction mediates the relationship between union support and safety motivation and -behaviour.

Practical/managerial implications: Mining organisations can, by placing the focus on reducing role stressors, and promoting job security and union support, achieve higher levels of safety motivation and -behaviour through job satisfaction.

Contribution/value-add: This research study contributes to the scientific literature in that the study ties together several independent streams of research. A great deal of independent research on work stressors, job insecurity, union support, job satisfaction and safety motivation and -behaviour has already been done. To date, very little empirical research exists that simultaneously considers all of these constructs. This study attempts to bring together these areas of research.

Keywords: work stress, role conflict, role overload, role clarity, job insecurity, union support, job satisfaction, safety motivation, safety behaviour, safety compliance, mine workers, structural equation modelling

Introduction

South Africa is one of the world's leaders in the mining industry, known for its rich mineral resources, and contributing significantly to both world production and reserves. The mining industry of South Africa is a dominant force globally, and locally largely contributing to South Africa's GDP (Gauteng Provincial Government, 2013). For almost 150 years the driving force behind South Africa's economy was considered to be the mining industry and it still remains a significant source of growth for the country. According to the Chamber of Mines, the mining industry provides approximately one million jobs - spending ZAR 78 billion in wages and salaries (Smit, 2013) and accounting for about 18% of GDP. Additionally, in 2012 the mining industry contributed ZAR 468 billion to South Africa's economy, accounting for over 16% of the formal sector employment. It is therefore evident that mining plays a pivotal role in the South African economy.

However, of concern is the poor safety record and number of fatalities within the South African mining industry. Total fatalities were 221 in 2007; 168 in 2008; 169 in 2009; 128 in 2010, 123 in 2011 and 112 in 2012; the lowest ever recorded (Department of Mineral Resources, 2012). Even though an improvement in the fatality rate has been evident over the last couple of years, mining is still regarded as one of the toughest, most dangerous and hazardous occupations in South Africa (Le Roux, 2005; Paul & Maiti, 2005).

Employees are exposed to several *job demands* every day. These workplace demands entail continuous physical and psychological effort, which in turn may have important physiological and psychological implications (Bakker, Demerouti, & Schaufeli, 2003; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). The manifestation of job demands has been associated with increased levels of burnout and decreased job performance (e.g., Bakker et al., 2003). In high-risk work environments, such as the mining environment, job demands such as physically demanding or cognitively challenging work or exposure to hazardous materials are also present. These job demands have the potential to cause very negative consequences, such as workplace accidents, injuries and fatalities.

Fortunately, the workplace also provides employees with *job resources*, to enable them to cope with the demands they face (Crawford, LePine & Rich, 2010). According to Demerouti

et al. (2001), job resources diminish job demands and their associated physiological and resources have also been shown to increase employee engagement, performance, and job satisfaction (Bakker & Demerouti, 2007; Rich, LePine, & Crawford, 2010). Therefore, if employees are faced with insufficient job resources, they will not be able to efficiently deal with challenging demands which may have undesired consequences, such as not adhering to safety rules and regulations (Probst & Brubaker, 2001).

In research conducted on workplace safety, emphasis has been placed on the role of the work environment when considering safety in the workplace (Ghosh, Bhattacharjee, & Chau, 2003). Literature consistently shows a negative relationship between work stressors and various outcomes, such as a lack of job satisfaction, lower organisational commitment, decreased job performance and increased turnover (Karsh, Booske & Sainfort, 2005; Yousef, 2002). Work stressors, such as performance pressure, time constraints, and targets that have to be reached within strict deadlines, may encourage employees to take shortcuts; thereby putting themselves at risk by jeopardising safety rules and regulations. The alleviation of excessive work stressors is a great challenge for employees, considering the deleterious effect work stressors can have on their health, and organisational outcomes such as organisational commitment, job satisfaction and the occurrence of workplace fatalities and accidents (Gyekye, 2005). These findings generally demonstrate that increased work stressor levels have a negative effect on the safety compliance of employees.

Likewise, job insecurity is regarded as a major concern in the mining industry and a demanding aspect of work. Restructuring and organisational downsizing are realities feared by many of today's employees. Studies have shown that employees who reported experiencing job insecurity were more less likely to experience job satisfaction (Blanchflower & Oswald, 1999; Chirumbolo & Areni, 2005); instead they suffered negative physical health consequences (Richter, 2011) and showed a lack of compliance with safety regulations (Probst & Brubaker, 2001).

In the mining industry, strikes and industrial actions are some of the major threats for this industry. The five month long strike in the platinum sector resulted in a catastrophic loss for both mine investors and mining workers. A total loss of R24 billion was estimated and now the platinum sector is starting with retrenchments to try and recover some of its losses (Mail & Guardian, 2014). Although the impact of job insecurity on employee attitude and

behaviours, as well as important organisational outcomes has been well explored, research regarding the implications of job insecurity on employee safety is still relatively unexplored within the mining environment of South Africa.

As mentioned earlier, the workplace should provide employees with resources to cope with the ever increasing demands they are faced with. Union support is regarded as such a job resource, in that the role of unions is to protect their workers from potential unethical treatment and to make sure that they are treated in a fair and humanistic way (Hellgren, Chirumbolo, 2003; Goslinga & Sverke, 2003). Additionally, the purpose of unions is to improve employees' welfare and satisfaction through changes in the work environment and wages. Unions play a critical role in the enforcement of safety policies, occurring through formal training, introduction of safety language into contracts, and monitoring labour sites. A tendency exists for union representatives to exercise their right by inspecting these policies and procedures more often than non-union members. This happens in conjunction with the health and safety representatives of different sections where there are more than 20 employees per section (Occupational Health and Safety Act 85, 1993). Managers at union sites are thereby more encouraged to comply with occupational health and safety regulations and other additional safety practices (Ringen, Englund, Welch, Weeks, & Seegal, 1995).

In a study conducted by Masia and Pienaar (2011), job satisfaction was found to be a strong predictor of safety compliance. Job satisfaction is believed to be an accurate indicator of workers' feelings towards their job, duties and work environment. According to Dunbar (1993), results showed that job dissatisfaction has a negative impact on employees' use of protective equipment. Another study found that one of the consequences of job dissatisfaction among employees may be permitting conditions to deteriorate, since decreased effort and increasing error rate consequently culminate in higher incident and fatality rates (Probst, 2002; Salminen, 1995) Job dissatisfaction may have several undesirable outcomes, including a lack of compliance with safety rules and regulations, consequently contributing to the number of accidents and incidents in the workplace.

The objective of this study was to assess the relationship between work stressors, job insecurity, union support and outcomes such as job satisfaction, safety motivation and behaviour. The results are important in aiding organisations towards identifying factors that

can increase job satisfaction and safety motivation and -behaviour, as well as factors that may impede these desired outcomes.

Literature review

Work stressors

The term *work stressors* is used to describe the pressure an employee experiences as a result of organisational and job-specific factors in the form of demands and constraints that are placed on him or her at work (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). In this study work stressors refers to role stressors and job insecurity. Three of the most frequently examined types of stressors are role conflict, role clarity (ambiguity) and role overload (Rizzo, House, & Lirtzman, 1970).

Role conflict can be described as the inconsistent and conflicting expectations between colleagues where interferences within one another's work areas complicate work completion (Katz & Kahn, 1978). Rizzo et al. (1970) are of the opinion that role conflict is demonstrated in numerous ways: (a) through workers' internal values and expected job behaviours; (b) through time, resources, or skills and abilities of workers; (c) through workers fulfilling numerous roles which may lead to incompatible behaviour; and finally (d) through inconsistent expectations and organisational demands.

Role clarity can also be, conversely, referred to as role ambiguity, indicating that the individual has ambiguous or indefinite expectations regarding his or her roles and responsibilities (Kahn et al., 1964; Katz & Kahn, 1978). Plenty of research has shown that role stressors may contribute largely to work attitudes and strain (O'Driscoll & Beehr, 1994; Stordeur, D'hoore, & Vandenberghe, 2001). Various studies of role stressors have established that role conflict and role clarity have a significant influence on employees' level of job satisfaction, anxiety, emotional exhaustion and organisational commitment (Fried, Shirom, Gilboa, & Cooper, 2008; Jackson & Schuler, 1985; Örtqvist & Wincent, 2006).

Role overload can be described as the amount of work an employee is required to do within an expected time frame (Cooper, Dewe, & O'Driscoll, 2001). Role overload occurs when employees' work tasks entail more time and effort than they have available to adequately

perform their expected roles. Results from literature yielded that role overload is associated with increased levels of strain and anxiety, in addition to poor job performance and decreased levels of job satisfaction (Cooper et al., 2001). Role overload is a crucial factor in the mining industry since workers are expected to be very productive, work overtime and to maintain high levels of work engagement in multiple work roles (Beck, 1998).

Job insecurity

The subcontracting of labour and the significant impact thereof on job security have received growing recognition in the mining industry over the last few decades (Kenny & Bezuidenhoud, 1999), i.e. employees without a permanent appointment experience more job insecurity. Job insecurity is defined by Greenhalgh and Rosenblatt (1984) as a “sense of powerlessness to maintain desired continuity in a threatened job situation” (p. 438). Job insecurity was originally measured as a uni-dimensional phenomenon; however, Hellgren, Sverke, and Isaksson (1999) distinguished between quantitative and qualitative job insecurity. *Quantitative* job insecurity refers to employees’ concerns regarding the prospects of the present job, whereas *qualitative* job insecurity refers to employees’ fear of reduced quality in the work relationship (concerning aspects such as features of the job, career progression and salary increases). According to Hellgren et al., (1999) job insecurity is subjective and therefore, although employees are exposed to similar situations, they may react in different ways when uncertainty about the future occurs. Research revealed that the anticipation of potential job loss can be regarded as a work stressor which can have short term negative effects on employees’ work attitudes, i.e. job satisfaction and turnover intention, while in the long term it may affect employees’ overall well-being and health (Cheng & Chan, 2008; Sverke, Hellgren, & Näswall, 2002).

Union support

The traditional role of unions is to establish a workplace where its members’ rights for fair treatment and a safe work environment are protected (Cregan, 2005; Kochan, Katz, & McKersie, 1986). Employees often join unions in the belief that the presence of a union will improve their working conditions (Hartley et al, 1991). In a study conducted by Greenhalgh and Rosenblatt (1984), they found that the role of the union is to minimise a feeling of helplessness when it comes to job insecurity; employees feel more secure because of the

power and negotiating position in helping them to retain their jobs. Furthermore, Sverke, Hellgren, Näswall, Chirumbolo, De Witte, and Goslinga (2004) found that union members have different experiences in terms of job insecurity, job satisfaction and organisational commitment as compared to non-members. Another example of these differences includes Borjas' study (Borjas, 1979) in which it was found that union support has a positive relationship with job satisfaction. In the light of the roles unions occupy, Shore, Tetrick, Sinclair, and Newton (1994) describe perceived union support as "members' global beliefs concerning the extent to which the union values their contributions and cares about their well-being" (p. 971). The effect of union support can be explained on the basis of the social exchange theory, suggesting that when members feel they receive support from their unions, they may in turn feel an obligation to be devoted and dedicated toward their union (Goslinga, Hellgren, Chirumbolo, De Witte, Näswall, & Sverke, 2005).

Job satisfaction

Job satisfaction is defined as "a pleasurable emotional state that results from the appraisal of one's job as achieving or facilitating one's job values" (Locke, 1969, p. 317); whereas job *dissatisfaction* is defined as "the unpleasurable emotional state resulting from the appraisal of one's job as frustrating or blocking the attainment of one's values" (Locke, 1969, p. 317).

Researchers such as Weiss, Nicholas, and Daus (1999) distinguished between job satisfaction as being either an emotional reaction or an attitude employees hold about their job. Job satisfaction, according to Spector (1997), simply refers to the degree to which employees like or dislike their jobs. It is therefore clearly evident that job satisfaction is a strong indicator of employees' feelings regarding their job. Job satisfaction is often a direct reaction towards immediate working conditions. In a study done by Vandenberghe, Panaccio, Bentein, Mignonac, and Roussel (2011), for example, they found that employees who experienced high levels of role conflict and role overload tended to experience low levels of job satisfaction. It is evident that role conflict and role overload limit employees from being effective in their work tasks, consequently decreasing satisfaction derived from their job. Thus, empirical literature confirms that job satisfaction is directly associated with employees' working conditions and that increased work stressors are related to decreased levels of job satisfaction (Acker, 2004; Orgambidez-Ramos, Borrego-Alés, & Mendoza-Sierra, 2011).

Safety motivation and -behaviour

In the mining industry productivity, pressure and strict deadlines are highly emphasised and as a consequence thereof created the tendency among many workers to participate in unsafe behaviours (Janssens, Brett, & Smith, 1995). Neal and Griffin (2006) describe safety motivation as an employee's preparedness to exert effort to enact safety behaviours as well as the eagerness linked to those behaviours (Neal & Griffin, 2006). Employees who perceive their work environment to be safety conscious have the tendency to be more motivated to partake in safety activities and are more likely to comply with safety rules and regulations - thus exhibiting safety behaviour (Griffin & Neal, 2000). Evidence to support this statement is provided in a longitudinal study conducted by Probst and Brubaker (2001), in which the effect of safety motivation has a prolonged impact on safety compliance up to six months later. Furthermore, it has been argued that theories of work performance offer a valuable foundation for conceptualising the relationship between safety climate and safety behaviour (Griffin & Neal, 2000). Borman and Motowidlo (1993) distinguish between two types of safety behaviour, namely compliance and participation.

Neal and Griffin (2006) describe safety compliance as the essential actions employees need to adhere to in order to maintain safe working conditions. These crucial behaviours include following standard work policies and procedures, and wearing protective gear. Safety participation, on the other hand, describes behaviours that are not directly linked to individuals' personal safety, but rather to develop safe working conditions (Griffin & Neal, 2000). These behaviours comprise taking part in voluntary safety activities, assisting fellow workers with safety-related matters, and attending safety meetings.

The relationship between work stressors and job satisfaction

Work stressors have been identified as a concern that manifests itself in employee absenteeism, turnover, and reduced productivity (Karasek & Theorell, 1990). Similarly, a variable closely associated with work stressors is job satisfaction. Numerous researchers have shown that job satisfaction plays a vital role in an organisation, due to its significant relationships with important organisational outcomes such as job insecurity, intention to leave, and safety behaviour (Paul & Maiti, 2005; Probst & Brubaker, 2001; Saks, 2006). Work stressors, in particular role conflict, role clarity, and role overload, have previously

been classified as organisational factors associated with burnout and lower levels of job satisfaction (Acker, 2004, Carlson, Kacmar, & Williams, 2000). The multiple stressors employees experience in the workplace can pressure them to make risky decisions regarding managing their work tasks with limited resources and time. Stress in the workplace caused by role conflict, role clarity, and role overload negatively influences job satisfaction suggesting that the less work stressors employees perceive, the more job satisfaction they should report (Kahn et al., 1964; Rizzo et al., 1970).

Hypothesis 1a: Role stressors will be negatively related to job satisfaction.

The relationship between work stressors and safety motivation and -behaviour

Organisations are constantly striving to increase production, without taking into account that employees may often neglect safety procedures in an attempt to reach their performance targets (Probst & Brubaker, 2001). These findings seem to be consistent with other research that has found that work stressors have a negative impact on employee safety motivation and behaviour (Hofmann & Stetzer, 1998). A possible explanation for these results may be found in a study where the researchers emphasise that an overload of employee tasks and responsibilities, impracticality of their job demands, and a lack of awareness may have a significant impact on employees' safety motivation and -behaviour and should be considered during accident investigation (Ashworth & Peake, 1994).

Hypothesis 1b: Role stressors will be negatively related to safety motivation and -behaviour.

The relationship between job insecurity and job satisfaction

One of the most consistent findings in literature is that job insecurity is closely associated with job satisfaction (Delp et al., 2010; De Witte, 1999; Näswall & De Witte, 2003; Sverke & Hellgren, 2002). Kaiser (2002) investigated the job satisfaction of employees with several types of contracts, such as full-time permanent, full-time fixed-term, part-time permanent, part-time fixed-term, and self-employment. It was found that permanently employed and part-time workers expressed less job insecurity and more job satisfaction than those employees who were either employed fixed-term or self-employed. It is therefore evident that workers' job (in)security influences their level of job satisfaction.

Hypothesis 2a: Job insecurity will be negatively related to job satisfaction.

The relationship between job insecurity and safety motivation and -behaviour

Research has indicated that job insecurity is negatively correlated to the utilisation of protective equipment (Dunbar, 1993); therefore impacting negatively on compliance with safety policies, rules and regulation and consequently giving rise to a number of accidents and safety-related incidents in the workplace (Ashford, Lee, & Bobko, 1989; Probst & Brubaker, 2001).

These findings can be explained in the light of the social exchange theory which states that employees have beliefs regarding the degree to which they are valued, treated fairly and cared about by their organisation (Eisenberger, Huntington, Hutchinson, & Sowa, 1986). In turn, employees demonstrate an equally positive attitude towards the organisation, exhibiting more satisfaction and more commitment (Rhoades & Eisenberger, 2002). Therefore, employees who experience less job insecurity may perceive more organisational concern and support, consequently generating more secure, motivated and committed employees. These employees will in turn display positive behaviour, contributing to the overall well-being of the organisation, and amongst others, the safety of the organisation.

Hypothesis 2b: Job insecurity will be negatively related to safety motivation and -behaviour.

The relationship between union support and job satisfaction

Some researchers argue that unions can support their members by “putting pressure on management to tighten job production standards and accountability in order to preserve profits in the face of higher wages” (Slichter, Healy, & Livernash, 1960; p. 15). Unions also have an impact on management practices focused on examining a range of workplace policies, such as work hours, wages, subcontracting etc. Among the positive effects of unions, Slichter et al. (1960) emphasise improved communication and a better balance between management and workers’ interests. Furthermore, it is unions’ purpose to increase employees’ job satisfaction; members who are satisfied with their job serve as proof of the advantages of union membership (Gallagher & Strauss, 1991). Unions aim to increase members’ job satisfaction by improving workplace conditions through negotiation. By means

of collective bargaining and the successful handling of grievances unions manage to advertise the benefits of membership. It is thus expected that a positive relationship exists between union support and job satisfaction (Lillydahl & Singell, 1993).

Hypothesis 3a: Union support will be positively related to job satisfaction.

The relationship between union support and safety motivation and -behaviour

Differences have been found between union members and non-union members' responses to the topic of safety in the workplace, i.e. Union members have been found to perceive their supervisors as being more concerned with their safety than non-union members (Gillen, Baltz, Gassel, Kirsch, & Vaccaro, 2002). Furthermore, it has been found that union workers are more aware of dangerous work practices and participated in regular job safety meetings; unionised workplaces seem to have the tendency to offer additional training and other formal systems, such as safety policies (Verma, 2005). Since unions play a vital role in establishing safety standards and enforcing better reporting systems, they are expected to have a positive association with workplace safety (Springer & Hodgson, 1997). Finally, Verma (2005) pointed out that workplaces represented by a union are much more likely to have labour inspections than non-unionised workplaces, even when the health and safety legislation is applied to both union and non-unionised workplaces (Weil, 1991, 1992).

Hypothesis 3b: Union support will be positively related to safety motivation and behaviour.

The relationship between job satisfaction and safety motivation and -behaviour

Probst and Brubaker (2001) found noteworthy evidence that job satisfaction is an important predictor of safety motivation and knowledge. This finding suggests that labourers who are satisfied with their work are more likely to comply with safety rules and regulations; thus exhibiting safety behaviour. It is therefore possible that higher levels of job satisfaction may bring about higher overall safety motivation and compliance. These findings are confirmed in previous studies (Ashworth & Peake, 1994; Hayes, Perander, Smecko, & Trask, 1998; Probst, & Brubaker, 2001). Other researchers have also indicated that job satisfaction can be influenced by perceptions of the safety climate. Once again, the social exchange theory can be used to explain this relationship. According to this theory, when employees feel valued by

their organisations, they feel an obligation to respond positively in return. Therefore, when employees experience satisfaction at work, they often also feel satisfied with workplace conditions and may in turn feel a need to react in a way that will be beneficial for the organisation (Blair, 1999). Likewise, when employees are dissatisfied at work, they may allow conditions to deteriorate. This may include reduced effort as well as an increased error rate, which may lead to higher safety incident rates (Probst & Brubaker, 2001).

Hypothesis 4: Job satisfaction will be positively related to safety motivation and -behaviour.

Potential indirect effect(s) and mediation

Job (dis)satisfaction plays a vital role in workplace attitudes and behaviours (Orgambídez-Ramos, Borrego-Alés, & Mendoza-Sierra, 2014). Considering the negative impact of low levels of job satisfaction, it is crucial to investigate factors that may influence job satisfaction, as well as programs that address job satisfaction, and, in turn, reduce negative work behaviours. Previous research has indicated that job satisfaction is a mediator between the external job demands (stressors such as role conflict, ambiguity and overload in the climate) and work-related outcomes (such as safety behaviour) (Ashworth & Peake, 1994; Paul & Maiti, 2005; Probst & Brubaker, 2001).

Hypothesis 5: Job satisfaction mediates the relationship between job insecurity, role stressors, union support and safety motivation and -behaviour.

Research design

Research approach

For this study a quantitative approach was followed. According to Struwig and Stead (2001), quantitative research is based on larger samples of participants and structured to a certain extent, by measuring the constructs of the study utilising a questionnaire. An electronic questionnaire was used, as well as pen and paper surveys. The questionnaire consisted of items measuring the constructs that were introduced in the literature study. The different constructs were measured simultaneously and at one specific time, which makes the broader approach cross-sectional in nature (Salkind, 2009).

Research method

Participants

For the purpose of this study numerous employees ($N = 260$) were approached in a mining environment through making use of a convenient sampling method, such as shift bosses and supervisors, each overseeing a number of employees and dealing more hands-on with unions and safety behaviour of their employees on a daily basis. Furthermore, the sample included a combination of two mines from the same organisation, one in the Gauteng province and the other in Limpopo province. The sample was diverse in terms of age, gender, and language. The sample group represented the iron ore open cast mining industry of South Africa. The characteristics of the participants are displayed in Table 1.

Table 1

Characteristics of the Participants (N = 260)

Item	Category	Frequency	Percentage (%)
Gender	Male	228	87.70
	Female	32	12.30
Age in years	70 – 79	1	0.40
	60 – 69	2	0.80
	50 – 59	32	12.30
	40 – 49	62	23.80
	30 – 39	118	45.30
	20 – 29	40	15.40
Education	Grade 10	38	14.60
	Grade 11	41	15.80
	Grade 12	104	40.00
	College Diploma	35	13.50
	Technikon Diploma	10	3.80
	Degree	16	6.30
	Postgraduate degree	9	3.60
Home language	Afrikaans	51	19.60
	English	10	3.80
	Sepedi	23	8.80
	Sesotho	19	7.30
	Setswana	10	3.80
	siSwati	16	6.20

	Tshivenda	7	2.70
	isiNdebele	45	17.30
	isiXhosa	9	3.50
	isiZulu	55	21.20
	isiTsonga	14	5.40
	Other	0	0.00
Employment status	Full-time	225	98.00
	Part-time	5	2.00
Union membership	Yes	203	78.10
	No	6	2.30

Note. Where percentages do not add up to a 100% it is due to missing values

The majority of the sample consisted of male employees ($n=228$; 87.70%). The mean age of the sample was 38.32 (SD=9.15). A total of 40% of the sample had a general high school education (Grade 12; $n=104$). The language groups with the highest levels of participation were: isiZulu ($n=55$, 21.20%), Afrikaans ($n=51$; 19.60%), and isiNdebele ($n=45$; 17.30%). Furthermore, most of the participants were full-time employees ($n=225$; 98.00%) and formed part of a union ($n=203$; 78.10%).

Measuring instruments

Biographical questionnaire: The biographical questionnaire consisted of questions gathering information regarding age (year of birth), race, language, gender, job title, education, employment status, work experience, and union membership.

Role stressors: was a composite variable measured by items from role conflict, role overload (quantitative), role overload (qualitative), and role (goal) clarity scales. Other researchers have also applied this strategy as an indication of work stress (e.g. Masia & Pienaar, 2011). *Role conflict* contained items based on how the employee thinks he should do the work compared to how his supervisor and superiors tell him the work should be done. This scale was originally invented by Rizzo et al. (1970). An example item of this construct was ‘*I receive incompatible requests from two or more people*’; measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). *Role overload* comprised seven items (three qualitative and four quantitative), measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The quantitative role overload scale was based on how the

employees experience their work load (Beehr, Walsh, & Taber, 1976). The work load is typically measured against their time, for example, not enough time compared to their amount of work. An example item of this construct is '*I am given enough time to do what is expected of me in my job*'; whereas the qualitative role overload scale contained items based on how the employees experience the difficulty of their job, whether or not it is too demanding (Sverke, Hellgren, & Öhrming, 1999). An example item of this construct is '*I feel unreasonable demands in my work*'. *Role clarity* (Rizzo et al., 1970) contained items regarding the clear understanding of the roles and responsibilities of the employee, e.g. '*I know exactly what is expected of me on a daily basis*', measured on a scale of 1 (strongly disagree) to 5 (strongly agree). Previous reliability for a composite scale has been deemed acceptable ($\alpha = 0.71$; Masia & Pienaar, 2011).

Job insecurity: The job insecurity scale (JIS) was developed by Hellgren et al. (1999). The questionnaire consisted of seven items (three qualitative and four quantitative), measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The quantitative items measured the future uncertainty and worry of employees regarding their employment. An example item of this construct is '*I am worried about being able to keep my job*'; whereas qualitative job insecurity focuses on worries relating to losing important aspects in one's job. An example item of this construct is '*I worry about getting less stimulating work tasks in the future*'. Here a combined job insecurity factor was also used as in previous research that has utilised the same scale (e.g. Masia & Pienaar, 2011). Previous reliability for this scale has been deemed acceptable ($\alpha \geq 0.70$; Masia & Pienaar, 2011).

Union support: The union support scale is an adapted version of that of Shore et al. (1994). An example item of this construct is '*I can always call upon my union with questions or problems*'; measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Job satisfaction: The job satisfaction scale is based on three items, and was developed by Hellgren, Sjöberg, and Sverke (1997). An example item of this construct is '*I am satisfied with my job*'; measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Previous reliability for this scale has been deemed acceptable ($\alpha = 0.75$; Masia & Pienaar, 2011).

Safety motivation and -behaviour: The safety motivation and -behaviour scales were developed by Neal, Griffin, & Hart, (2000). The two scales were combined in this study due to an almost perfect correlation between the two latent variables, indicating that participants did not fully discriminate between the items of the two separate scales. *Safety motivation* was measured by four items and investigated the extent to which employees believe health and safety is an important issue in the workplace. An example item of this construct is ‘*I believe that workplace health and safety is an important issue*’; measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Previous reliability for this scale has been deemed acceptable ($\alpha = 0.85$; Neal et al., 2000). *Safety behaviour* was measured by three items that measured safety behaviour and compliance. An example item of this construct is ‘*I carry out my work in a safe manner*’; measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Previous reliability for this scale has been deemed acceptable ($\alpha = 0.72$; Vinodkumar & Bahasi, 2010).

Research procedure

Permission was obtained to implement the project at the mining locations. At first, an email regarding the importance of the study was sent to the participants, explaining what the research was about, confidentiality regarding the assessment, and the assurance that participation would be free and fair, and that withdrawal from the project would be without any negative consequences. The questionnaires were sent electronically to the shift bosses and supervisors that participated in the study, although participation was still voluntary.

Statistical analysis

With the intention of calculating the reliability of constructs, alpha coefficients are usually utilised (Cronbach, 1951). However, due to its inaccurate estimate of internal consistency and in some cases a gross overestimate of the correlation between test scores (Revelle & Zinbarg, 2009), other alternatives such as omega coefficients with 95% confidence intervals have been proposed and, in so doing, abandoning alpha (Peters, 2014).

Furthermore, structural equation modelling methods were implemented with Mplus 7.2 (Muthén & Muthén, 2014), i.e. confirmatory factor analysis was used to constitute a measurement model. All latent factors were constructed with their corresponding individual

items as observed indicators. Thus, no item parcelling or sum score methods were used in this study. Only after the best fitting measurement model had been found, would regressions be added to the model to establish the structural model for the study. The estimation method used to investigate the model was the mean and variance adjusted weighted least squares approach (WLSMV estimator), which is more suited to observe items that are categorical in nature. The following fit statistics were considered to ascertain model fit: Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and the Root-Mean-Square Error of Approximation (RMSEA) (Van De Schoot, Lugtig, & Hox, 2012). For the CFI and TLI, values of 0.90 and above are generally considered acceptable (Van de Schoot et al., 2012); and for the RMSEA values below 0.08, but models should only be rejected if the $RMSEA \geq 0.10$ and when other fit indices are acceptable (Van De Schoot et al., 2012).

Statistical significance levels were set at the 95% confidence level ($p \leq 0.05$), and the effect sizes for correlation coefficients were considered to be either small ($r \leq 0.29$), medium ($r \geq 0.30$), or large effects ($r \geq 0.50$) (Cohen, 1988). Even though mediation models are more suited to longitudinal studies in addressing the issue of time (Selig & Preacher, 2009), the hypothesised relationships were deemed to be of such a nature that potential indirect effects could be evident, even in cross-sectional data. Thus, to be completely thorough in this study, it was decided to investigate these potential effects. This was done with the MODEL INDIRECT function in Mplus and using the bootstrapping method with a request for 5000 resampling draws and confidence intervals at the 95% lower and upper level for the indirect effects (Muthén & Muthén, 2014; Rucher, Preacher, Tormala, & Petty, 2011).

Results

Model fit

Results from the CFA revealed that the measurement model fit the data. More specifically, the following values were generated for the considered fit indices: CFI (0.93), TLI (0.93), and RMSEA (0.06). The regression paths were then added to the model in order to specify the structural model (see Figure 1). The results of the structural model revealed that this model also fitted the data well: CFI (0.91), TLI (0.90), and RMSEA (0.07). Based on the acceptable fit criteria, it was deemed appropriate to continue interpreting the results of the correlation

matrix, the structural regressions, and any potential indirect effects that might be evident in the model.

Correlations and omega reliability

Table 2 presents the omega reliabilities with 95% lower and upper confidence intervals and the correlation matrix for the latent variables.

Table 2

Omega Reliabilities and Correlation Matrix of the Latent Variables

Variable name	Reliability	<i>r</i>				
	ω	1	2	3	4	5
1. Job insecurity	0.79 [0.74; 0.84]	1.00				
2. Work stressors	0.83 [0.80; 0.85]	0.56**	1.00			
3. Job satisfaction	0.86 [0.80; 0.89]	-0.30*	-0.36*	1.00		
4. Union support	0.76 [0.69; 0.82]	0.18	0.17	0.41	1.00	
5. Safety motivation and -behaviour	0.89 [0.86; 0.91]	-0.06	-0.29	0.60**	0.41*	1.00

Note: $p < 0.05$ for all values; ω = omega reliability coefficient with lower and upper 95% confidence intervals; r = correlation coefficient ; * = practically significant medium effect; ** = practically significant large effect

The omega reliabilities of all the scales were acceptable ($\omega > 0.70$), implying that all the scales used in this study were reliable. The correlation matrix revealed that only union support was statistically significantly positively correlated with all of the other variables, but only to a practical degree with job satisfaction ($r = 0.41$; medium effect). The largest correlation was between job satisfaction and safety motivation and -behaviour ($r = 0.60$; large effect). It is evident that job insecurity was negatively related to both job satisfaction ($r = -0.30$; with a medium effect) and safety motivation and -behaviour. Furthermore, data in Table 2 indicate that role stressors were negatively related to job satisfaction and safety motivation behaviour. Additionally, a positive relationship (with medium effect; $r = 0.41$) was found between union support and job satisfaction. Lastly, the results indicate that union support and safety motivation-behaviour are positively correlated (with medium effect; $r = 0.41$).

Structural Paths

Table 3 presents the structural relationships of the hypothesised model.

Table 3

Structural Relationships of the Hypothesised Model

Specified regression path relationship	β	S.E.	p	Result
Work stressors → Job satisfaction	-0.33	0.09	0.01	Significant
Work stressors → Safety motivation and -behaviour	-0.27	0.10	0.01	Significant
Job insecurity → Job satisfaction	-0.20	0.10	0.03	Significant
Job insecurity → Safety motivation and -behaviour	0.19	0.10	0.08	Not significant
Union support → Job satisfaction	0.50	0.06	0.01	Significant
Union support → Safety motivation and -behaviour	0.23	0.09	0.01	Significant
Job satisfaction → Safety motivation and -behaviour	0.46	0.09	0.01	Significant

Notes: β = Beta coefficient; S.E. = Standard error; p = Statistical significance

The regressions of the structural model indicated that role stressors had a significant negative predictive relationship with both job satisfaction ($\beta = -0.33$; $p = 0.01$) and safety motivation and -behaviour ($\beta = -0.27$; $p = 0.01$). Furthermore, it was found that job insecurity had a negative relationship with job satisfaction ($\beta = -0.20$; $p = 0.03$), but no significant relationship with safety motivation and -behaviour ($\beta = 0.19$; $p = 0.08$). Union support had a positive relationship with both job satisfaction ($\beta = 0.50$; $p = 0.01$) and safety motivation and -behaviour ($\beta = 0.23$; $p = 0.01$). Finally, it is evident that job satisfaction had a significant positive relationship with safety motivation and -behaviour ($\beta = 0.46$; $p = 0.01$).

Indirect effects

Concerning the indirect effects of the model, bootstrapping mediation analysis revealed that only one of the indirect effects was significant, i.e. the mediating effect of job satisfaction between union support and safety motivation-behaviour: 0.26 [0.13; 0.39]. Furthermore, as the direct effect from union support to safety motivation-behaviour was also statistically significant - this mediating effect can be classified as a complementary mediation as per the guidelines of Zhao, Lynch, and Chen (2010) - as there was not only an indirect effect (which would indicate an indirect-only mediation), but also a direct path that was significant.

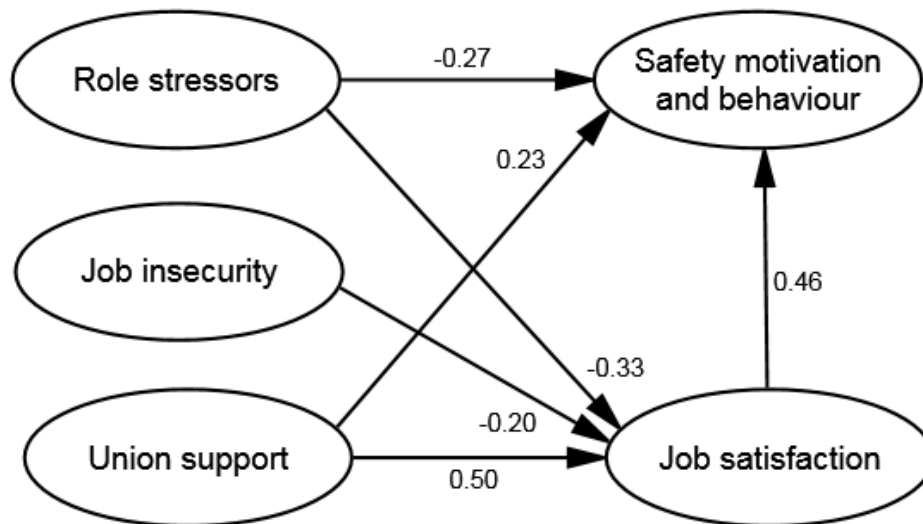


Figure 1. Structural model with the significant regression results.

Discussion

The primary purpose of this study was to investigate the relationship between work stressors, job insecurity, and union support, job satisfaction and safety motivation and -behaviour in the mining industry. To accomplish the above mentioned aims, confirmatory factor analysis, structural equation modelling and indirect effects were implemented and estimated.

The first objective of the study was to determine the relationship between work stressors and job satisfaction. Results revealed that role stressors were negatively related to job satisfaction, supporting Hypothesis 1a. Recent research reported by Ling, Bahron, and Boroh (2014) also found that work stressors had a negative relationship with job satisfaction. This further reinforces previous research in that the higher the role stress, the lower the job satisfaction (Karatepe, Yavas, Babakus, & Avci, 2006; Koustelios, Theodorakis, & Goulimaris, 2004; Morley and Flynn, 2003; Zeffane & McLoughlin, 2006). When employees perceive that they have inadequate available information to perform a task, or have uncertainty about regarding the expectations of their work, it causes their work to be increasingly demanding, consequently decreasing the levels of satisfaction at work.

The second objective was to determine the relationship between work stressors and safety motivation and -behaviour. It was anticipated that these two constructs would be negatively related. The results confirmed this relationship, providing evidence for Hypothesis 1b. This

finding can be explained in the light of workers' tendency to engage in unsafe behaviour when confronted with stressful work situations. This may include taking short-cut methods, compromising safety compliance that may cause injuries and accidents. These findings suggest that employees' compliance with safety rules and regulations reduces proportionately to their increased levels of stress at work (Ashworth & Peake, 1994; Hofmann, Jacobs, & Landy, 1995). Furthermore, Ashworth and Peake (1994) are of the opinion that excessive employee responsibility, the nature of job requirements and a lack of concentration should be explored when investigating accidents and fatalities. It is possible that these results are due to the fact that an overload of employee tasks and responsibilities, impracticality of their job demands, and a lack of awareness may cause them to feel pressurised. This may further lead to dangerous decisions regarding their work tasks, consequently impacting their safety motivation and -behaviour.

The next objective of this study was to investigate the relationship between job insecurity and job satisfaction. It was hypothesised that job insecurity is negatively related to job satisfaction, and the results supported Hypothesis 2a. Previous empirical research also directly linked high levels of job insecurity to dissatisfaction with one's job (Näswall & De Witte, 2003; Sverke & Hellgren, 2002). In a more recent study conducted by Delp et al. (2010), they also found that employees who experience job security are more likely to experience job satisfaction than those without this security. According to Hartley, Jacobson, Klandermands, & Van Vuuren (1991) job insecurity is seen as one of the most worrying burdens employees are faced with in the workplace. It is therefore understandable that employees who perceive their jobs to be insecure may experience less job satisfaction. In a similar vein De Witte (1999) accentuates that secure employment provide employees with various sources of satisfaction for example stability, social interaction, and self-efficacy.

Although it was predicted that employees' safety motivation and behaviour would be significantly impacted when their job security was threatened, a non-significant relationship was found between employees' perceived job insecurity and their safety motivation and behaviour. Hypothesis 2b is therefore rejected. This finding can be explained in the light of a study done by Probst (1998), stating that a direct relationship between job insecurity and safety motivation is unlikely. It is rather expected that job insecurity leads to job dissatisfaction and, as a consequence, negative outcomes such as a lack of safety motivation

and behaviour occur. A similar finding by Emberland and Rundmo (2010) also yielded no correlation between job insecurity and possible risk behaviour.

The next objective was to determine the relationship between union support and job satisfaction. As anticipated, a positive correlation and regression coefficient were found between union support and job satisfaction, substantiating Hypothesis 3a. Delp et al. (2010) provided evidence that employees who regarded union membership as important were more likely to experience job satisfaction than those who did not. Bender and Sloane (1995) emphasised that the aim of unions is to change working conditions that are poor, consequently engendering job satisfaction among employees. According to Porter and Steers (1973), the theory of need/value fulfilment suggests that the inconsistency between workers' needs and the degree to which their job meets their needs are negatively correlated to job satisfaction. Therefore, when unions address discrepancies, such as salaries and poor working conditions, employees may often feel their union is supporting them. When employees' needs are met, increased levels of job satisfaction can be expected (Probst & Brubaker, 2001).

Furthermore, a positive relationship between union support and safety motivation and behaviour was confirmed (Hypothesis 3b). This finding can be explained by previous studies conducted on unionisation and workplace safety (cf. Dedobbeleer, Champagne, & German, 1990; Ringen et al., 1995; Suruda, Whitaker, Blosswick, Philips, & Seseck, 2002). Various ways in which unions aim to promote safety in workplace have been recorded. Unions therefore play a crucial part in educating members about on-the-job hazards, providing them with incentives to be more cautious in the workplace, attracting more safety-conscious employees, encouraging workers to diminish known hazards, increasing supervisory inspections, and developing safety-related innovations (Morantz, 2009). It therefore seems as if union workers are more aware of dangerous work practices and tend to abide to safety policies and procedures more than non-unionised workers.

As expected, strong evidence was found for the relationship between job satisfaction and workers' safety motivation and -behaviour (which confirmed Hypothesis 4). This is congruent with research suggesting that employee satisfaction is often associated with decreased safety incident rates (Rossouw & Bews, 2002). Dunbar (1993) also found a negative relationship between job insecurity and job dissatisfaction and employees' use of protective gear. In line with these findings, Robbins (1998) found that one of the ways

employees may express job dissatisfaction could be to let conditions deteriorate, which may include reduced effort and increased error rate (naturally related to increased safety incident rates). These findings are in line with the social exchange theory, which states that when employees feel valued by their organisations, they feel an obligation to respond positively in return. Therefore, when employees experience satisfaction at work, they often also feel satisfied with workplace conditions and may in turn feel a need to react in a way that will be beneficial for the organisation (Blair, 1999). Job (dis)satisfaction therefore plays a vital role in workplace attitudes and behaviours (Orgambídez-Ramos, Borrego-Alés, & Mendoza-Sierra, 2014). Considering the negative impact of low levels of job satisfaction, it is crucial to investigate factors that may influence job satisfaction, as well as programmes that address job satisfaction, and, in turn, reduce negative work behaviours.

The last objective, which was to investigate the mediating role of job satisfaction between job insecurity, role stressors, union support and safety motivation and -behaviour was investigated by their indirect effects. It was anticipated that job satisfaction will mediate the relationship between job insecurity, role stressors, union support and safety motivation and behaviour. Results revealed that there was only a significant indirect effect of job satisfaction between union support and safety motivation and -behaviour. Thus, Hypothesis 5 was only partially confirmed. Since the aim of unions is, amongst others, to change poor working conditions, actively engaged union members may experience unions as a basis of emotional support and a way to exert their power over decisions, consequently resulting in job satisfaction (Bender & Sloane, 1998). Previous empirical studies have suggested that employees who showed high levels of job satisfaction also tended to have positive perspectives on the safety climate. Contrastingly, dissatisfied employees tended to have negative perspectives (Gyekye, 2005).

Managerial implications

This study yielded essential practical and theoretical implications. Firstly, regarding the practical suggestions, results proposed that mining organisations need to consider the implications of work stressors, job insecurity and union support on job satisfaction. The possibility that job insecurity and union support levels can render potential complications for employees' safety motivation and behaviour should also be considered.

Of particular interest is the relation between job satisfaction, union support and safety behaviour. Employees who feel that their unions are not supporting them, may experience decreased levels of job satisfaction and as a result decide to deliberately disregard safety policies, being less inclined to focus on safety motivation and -behaviour. The reason for this relationship and how mining organisations can avoid it needs to be further investigated. Organisations need to take cognisance of this possible hazardous relationship between union support, job satisfaction, safety motivation and -behaviour.

From a theoretical perspective, this study brings together various independent streams of research. As previously mentioned, much research has previously been done on work stressors, job insecurity and union support, but researchers have up to this point not considered job satisfaction and safety motivation and -behaviour as possible outcomes in one model. This study was a first attempt to combine these research areas within a South African context.

Limitations and recommendations

Certain limitations are worth mentioning. Firstly, the use of a cross-sectional research design has restricted the study from confirming causal relationships about the expected relationships between variables. Furthermore, the present research study was conducted amongst a sample consisting exclusively of workers in a specific type of mine in the mining industry, even though it was the aim of the study. Likewise, the majority of the sample comprised black males. As these results cannot be generalised to the general population, it is suggested that future studies consider more heterogeneous samples in different unionised industries.

A non-probability, convenience sampling method was utilised in this research study. Consequently, participants partaking in the study varied across two mining organisations in different geographical locations. Issues regarding the self-report questionnaires that were utilised in this study include accessing subjective factors, which may be influenced by a variety of factors and can play an essential role in the obtained results. Moreover, the variables of a self-report questionnaire could lead to common method variance between predictor variables and outcome variables (Malhotra, Kim, & Patil, 2006), although the means of addressing this problem are restricted (Salkind, 2009).

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CHAPTER 3

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

Conclusions, limitations and recommendations

The derived conclusion of this chapter was based on the overall and specific objectives of the study. A few limitations regarding the study will be discussed, as well as future recommendations concerning the specific industry.

3.1 Conclusions

This study was done in the mining sector and therefore the findings are applicable to this industry specifically. In South Africa, the mining sector is a demanding environment characterised by a strong focus on production efficiency. In this challenging work setting employees can easily disregard safety policies and procedures, trying to accomplish goals. Therefore, this highly demanding work environment with its focus on reaching targets, deadlines and certain outputs can contribute towards employees experiencing high levels of work stress, job insecurity, dependence on unions, reduced levels of job satisfaction and this, in turn, can have an impact on safety motivation and -behaviour.

The main objective of this study was to explore the relationship between work stressors, job insecurity, union support, job satisfaction, and safety motivation and -behaviour in the mining industry. The findings of this research provide managers with insights into how to maximise the job satisfaction and eventual safety motivation and -behaviour of their employees, through the management of role stressors, job insecurity and union support.

The first specific objective was to determine the relationships between work stressors, job insecurity, union support, job satisfaction, safety motivation and safety behaviour, according to literature. This objective was met by conducting and presenting a thorough literature review in Chapter 2 of this mini-dissertation.

The second specific objective was to provide evidence that role stressors and job insecurity (work stressors) are negatively related to job satisfaction. The correlation results confirmed Hypothesis 1a, namely that there is a negative relationship between work stressors and job satisfaction. Similar results have also been found in recent research by Ling, Bahron, and Boroh (2014). Subsequently, these findings can be explained in the light of the Job Demands-

Resources (JD-R) model (Bakker, Demerouti, & Sanz-Vergel, 2014). The proposition of this model is that there are many demands in the workplace. These job demands have been recognised as a substantial occupational hazard that can cause destruction of employee work-related outcomes, such as job satisfaction (Maslach & Leiter, 2008). Current research has shown strong negative relationships between job demands and desired work-related outcomes, such as job satisfaction (Karatepe, Yavas, Babakus, & Avci, 2006; Koustelios, Theodorakis, & Goulimaris, 2004; Morley & Flynn, 2003; Zeffane & McLoughlin, 2006).

In terms of Hypothesis 1b, there was a negative relationship between role stressors and safety motivation and -behaviour. However, no direct relationship from job insecurity to safety motivation and -behaviour was evident. Thus, Hypothesis 1b was only partially confirmed. These findings indicate that safety compliance is proportionally negatively related to work stress. This result is also evident in past research studies (Hofmann, Jacobs, & Landy, 1995; Van Zyl, 2003). Furthermore, Ashworth and Peake (1994) state that an overload of an employee's work demands, responsibilities, job necessities and low levels of concentration should be documented and considered during post-accident investigations.

In Hypothesis 2a a negative relationship between job insecurity and job satisfaction was expected and the results confirmed this hypothesis. Previous studies confirmed the link between high levels of job insecurity and low levels of job satisfaction (Ashford, Lee, & Bobko 1989; Näswall & De Witte, 2003; Sverke & Hellgren, 2002). This indicates that as job insecurity increases, job satisfaction will decrease.

For Hypothesis 2b the relationship between job insecurity and safety motivation and behaviour was found to be non-significant. This means that there is no clear indication that threatening job security will have a direct negative influence on an individual's safety motivation and -behaviour. Hypothesis 2b is therefore rejected. This finding can be explained in the light of a study done by Probst (1998), which stated that it is not likely that job insecurity will influence safety motivation directly, but job insecurity should rather lead to job dissatisfaction to have negative influence on safety motivation and -behaviour.

For Hypothesis 3a the relationship between union support and job satisfaction was investigated. As anticipated, a positive correlation and regression were found between union support and job satisfaction - indicating that a reciprocal relationship exists between union

support and job satisfaction. Delp, Wallace, Geiger-Brown, and Muntaner (2010) found that employees who regard belonging to a union as very important were more likely to experience job satisfaction compared to those who do not. Delp et al. further reported that actively engaging union members also described their union as a source of emotional support, and a way to exert influence over decisions on behalf of themselves, consequently leading to more job satisfaction. Bender and Sloane (1995) state that the aim of unions is to improve work conditions; resulting in employees who are more satisfied with their jobs. From the JD-R model's perspective, union support can be considered a job resource, and job resources are significantly related to positive work-related outcomes, such as job satisfaction (Bakker et al., 2014).

Hypothesis 3b was confirmed in that a positive relationship was found between union support and safety motivation and -behaviour. This finding can be explained by empirical literature on the relationship between unionisation and workplace safety (Dedobbeleer, Champagne, & German, 1990; Ringen, Englund, Welch, Weeks, & Seegal, 1995; Suruda, Whitaker, Bloswick, Philips, & Sesek, 2002). Unions help to promote safe work practices, and play an essential role in educating and enlightening employees about on-the-job hazards, providing them with incentives to exert more cautious behaviour, attracting other workers to be more safety-conscious, inducing employers to decrease recognised hazards, increasing regulatory inspection, and initialising safety-related innovations (Morantz, 2009).

Evidence was found to substantiate Hypothesis 4, confirming that job satisfaction is positively related to safety motivation and -behaviour. According to Orgambídez-Ramos, Borrego-Alés, and Mendoza-Sierra (2014), employees' attitudes and behaviours are largely influenced by their job (dis)satisfaction. In an effort to explain the motivational basis behind job satisfaction and positive behaviours such as safety compliance, researchers often refer to the Social Exchange Theory (Blau, 1964). This theory assumes that expressions of positive affect (caused by job satisfaction) create feelings of appreciation and a corresponding sense of commitment to respond positively in return (Crede, Chernyshenko, Stark, Dalal, & Bashshur, 2007). According to Blair (1999), if employees perceive that there are high levels of organisational support (and also concern), they will feel pleased with their workplace conditions and the urge to respond positively that will in turn benefit the organisational output. In the workplace this will be referred to as good corporate governance that leads to a positive psychological contract between employees and the organisation.

The final objective was to investigate the mediating (indirect) effect of job satisfaction between union support and safety motivation and -behaviour. The results showed a significant indirect effect, i.e. the mediating role of job satisfaction had been found in the relationship between union support and safety motivation and -behaviour. This result implied that: i) union members who actively engage in union activities may experience their union as a source of active support and a mechanism to exert influence over policy decisions on behalf of themselves, consequently leading to job satisfaction (Bender & Sloane, 1995); and ii) employees who conveyed higher levels of job satisfaction had a more positive outlook on the safety climate. Therefore, it is concluded that job satisfaction can be regarded as a mediator between union support and safety motivation and -behaviour.

Conclusively, the findings of this study underscore the critical need for mining organisations to be made aware of the antecedents of potentially dangerous work practices. It is evident from the results yielded that several factors play a role in the safety climate (safety motivation and -behaviour) in mining organisations. The study provides organisations and their leaders with knowledge on the antecedents of crucial organisational outcomes. Workplace interventions should be considered that foster working conditions which will decrease work stressors and job insecurity and increase the beneficial role of unions and job satisfaction, with the aim of creating a better, safer work environment.

3.2 Limitations

The first limitation of the study is that it was conducted amongst a sample consisting exclusively of workers in the mining industry. Valuable information, specifically applicable to the job satisfaction and safety motivation and -behaviour of mining workers, was found. However, the findings of the present study cannot be generalised to other industries and occupations and should as a result be carefully interpreted as the sample was homogeneous in nature.

Related to the homogeneity of the sample, it was also unequally distributed in terms of demographic characteristics. The sample consisted of mostly African black male employees (as implied by language group), suggesting a potential ethnic homogeneity bias, and that the results should also be cautiously interpreted when considering generalising to other ethnic

groups. South Africa is known for its culturally diverse population; therefore, it is crucial to consider if results reflect a true indication of ethnic, cultural and gender diversity.

The cross-sectional nature of this study had the implication that cause and effect of the expected relationships could not be conclusively established. Although self-report questionnaires may hold many advantages, several disadvantages are worth mentioning. Participants completing self-report questionnaires may sometimes exaggerate or under-report their answers and may be inherently biased by participants' feelings at the time they completed the questionnaire. Additionally, only one source (workers in the mining industry) was used to collect the data; therefore, only one type of instrument was used for measurement, which could lead to common measurement error (Carlson, 2002), although the real impact of this concern has been questioned (Spector, 2006). Furthermore, participants were assessed on subjective factors, such as perceived role stressors, job insecurity, job satisfaction and safety motivation which may be influenced by numerous unseen aspects (e.g. negative affect). The consideration of the impact of such factors is also important when interpreting the results.

In conclusion, despite the above-mentioned limitations, findings were provided that supported most of the proposed hypotheses. Even though certain limitations have been identified, the findings hold valuable implications for the mining industry and future studies.

3.3 Recommendations

3.3.1 Recommendations for the Mining Organisation

Mining organisations need to start working proactively regarding their safety motivation and -behaviour. Focusing on the psychological side of safety as well as the physical and competence side should positively influence safety motivation and -behaviour. The organisation must ensure that its employees have the necessary resources to cope with their work stressors and also ensure that unions have a positive influence on the workforce, a factor that contributes to employees' job satisfaction. Mining organisations have a two-pronged approach when it comes to safety in the workplace; considering both physical capability, for example, health and fitness; and competence, for example, do employees have

the necessary knowledge and skills to act safely in the workplace? On the other hand, not much is done to ensure that employees have the psychological fitness to act in a safe manner in the workplace. According to Brand-Labuschagne, Mostert, and Rothmann (2011), psychological fitness is the state in which an employee experiences high levels of motivational energy (psychological desire) and high levels of emotional and mental energy (psychological energy). Furthermore, organisations should not dismiss the role that unions can play in achieving these goals.

If proactive attention is given to these antecedents in the workplace, it should have a positive influence on the employees and eventual safety outcomes.

3.3.2 Recommendations for Future Research

Certain recommendations can be made for future research. In order to address the issue of causality, it is suggested that a longitudinal research design be utilised to further investigate the direct relationships, reversed relationships, indirect effects, and their possible consequences. The sample in the present study was quite homogeneous in terms of occupation and demographical variables, such as gender and race (implied by language group). Quota or purposive non-probability sampling may diversify the participants and could be recommended for future research.

Value can be gained from collecting data for a more heterogeneous sample, in different unionised industries, as it may deliver different (or similar) results and insights from the current study. Important information can also be gained by exploring additional work-related resources such as employee autonomy, colleague and supervisory support, and also external resources like personal support from the home environment.

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