

Individual characteristics and safety behaviour in a petrochemical company

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DECLARATION

I, Clive Mackay, hereby declare that this mini-dissertation submitted by me, in partial fulfillment of the Magister in Business Administration (MBA) Degree, is the product of my own research.

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Firstly, I would like to acknowledge my Lord and Saviour Jesus Christ, for giving me the strength, direction and wisdom through the past three years to complete this degree and dissertation.

Secondly, I wish to express my sincere gratitude and appreciation to the following people who made it possible for me to complete this dissertation:

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ABSTRACT

Title: Individual characteristics and safety behaviour in a petrochemical company.

Key terms: Safety behaviour, self-esteem, self-efficacy and work locus of control

Organisations all over the world have attempted to decrease at-risk behaviour by targeting at-risk acts, exclusive of safe acts, and using corrective feedback, reprimands, or disciplinary actions to motivate behaviour change. Research has shown that this approach was useful but did not improve since it was a reactive approach and not proactive. In an attempt to stem the tide of safety related incidence they have implemented Behaviour-based Safety. However, as is the case with other initiatives, this one also showed early results but started to plateau towards to end.

Aside from safety behaviour, demographic variables and constructs such as sense of Self-esteem, Self-efficacy and Work Locus of Control have a direct effect on the associated safety behaviour of employees. These styles may either be effective or ineffective, or have a direct impact on the demonstrated safety behaviour within the petrochemical company.

The purpose of this research study was to determine the possible relationship between individual characteristics, specifically Self-esteem, Self-efficacy and Work Locus of Control, and safety behaviour. A convenience survey design was used. The sample of 201 represented managers, supervisors and employees in a petrochemical company. A battery of four questionnaires were utilised, namely Self-esteem, the Generalised Perceived Self-efficacy Scale (GPSES), the Work Locus of Control Scale (WLOC) and a Safety Behaviour scale specifically designed for this study.

In this research study, individual characteristics and safety behaviour is conceptualised. Individuals with a high self-esteem may have an accurate, justified, balanced appreciation of their worth or value as a person and their successes and competencies. Self-efficacy can be conceptualised as a general, stable trait, which

relates to individuals' beliefs regarding the ability to mobilise their motivation, cognitive resources and actions to comply with demands from a situation. In respect of locus of control it refers to individuals' beliefs regarding their behaviour and the outcomes thereof. Individuals with an internal locus of control believe that outcomes in their lives are the result of their own internal attributes, as opposed to individuals with an external locus of control who believe that outcomes in their lives are beyond their control.

Cronbach alpha coefficients and factor analysis were used to determine the reliability and validity of the tests. Descriptive statistics (means, standard deviations, skewness and kurtosis) were used in the compiling of the profile of safety behaviour and individual characteristics as manifested in the group.

In summary, results of the present study indicate that Self-esteem, Work Locus of Control, and Generalised Self-efficacy are significant predictors of safety behaviour. However, there is much to be known about the exact nature of the traits (whether or not these are indicators of the broader core self-evaluations construct) and the processes by which they affect these outcomes. In light of the similar correlations of the traits with satisfaction and performance observed here, and the high correlations among the traits, future research considering these traits together appears warranted.

Recommendations for further research were made, as well as recommendations with regard to the company concerned.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This mini-dissertation covers individual characteristics and safety behaviour in the workplace of a petrochemical company. This research project will cover the following person-based factors only: Self-esteem, Self-efficacy, Work Locus of Control and Safety Behaviour.

In this chapter, the problem statement is discussed, and an outline is provided of the research objectives, research method and chapter division.

1.2 PROBLEM STATEMENT

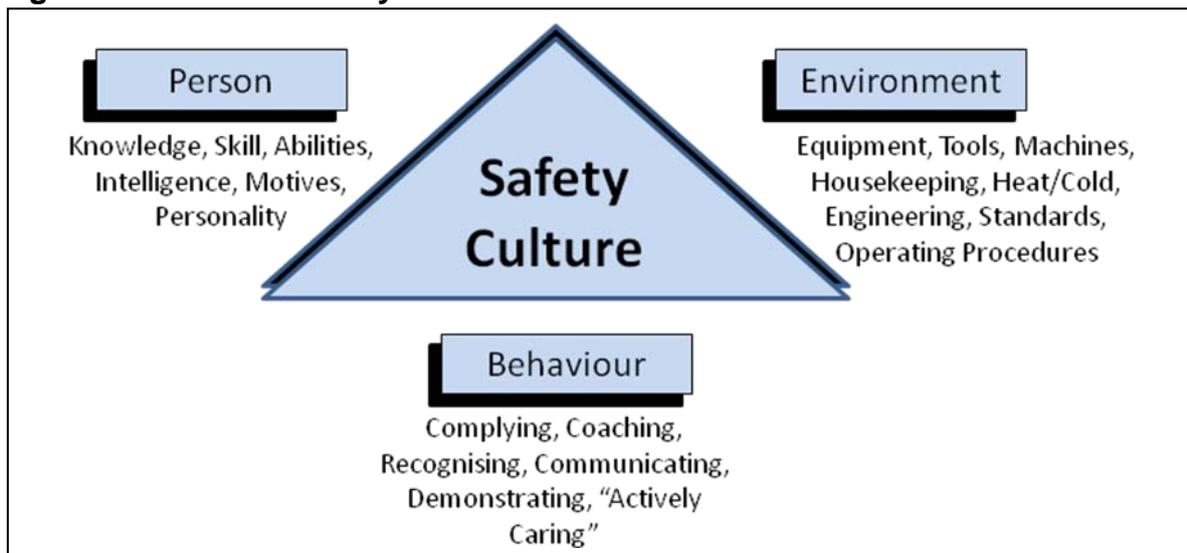
Industrial companies all over the world are experiencing high and unacceptable levels of incident rates. There are, however, many studies which contribute to an understanding of the causes of poor safety performance and various solutions are offered to combat the problem. Nonetheless, a clear-cut solution remains absent, as proposed solutions vary widely.

According to the annual report of the Department of Labour for 2008-2009, there were 271 fatalities out of 5 326 incidents reported (Statistics South Africa, 2009a & Statistics South Africa, 2009b). This equates to a fatality rate of ± 5 percent per 1000 employees injured in workplace incidents. In this study, the intention is to determine whether safety motivation levels can be improved through people-based safety leadership.

To develop a proper safety management system requires attention to three domains: the environment (equipment, tools and housekeeping), the person (knowledge, skills,

abilities, intelligence, and personality) and behaviour (Geller *et al.*, 1998). Figure 1.1 is a graphical representation of the domains referred to. It is well documented that, in the previous century, much emphasis was placed on improving "the environment" and "the person" (Geller *et al.*, 1998). In this study, the researcher examines the influence of individual characteristics of employees on Safety Behaviour.

Figure 1.1: A total safety culture



(Source: Geller, 2001)

An individual's perception of risk includes factors such as psychology, sociology, and the anthropology of humans. It relates to the external and socio environment as well as the individual's beliefs as influenced by a cultural impact. It is well known that people adjust their risk-taking behaviour according to the perceived level of risk. This means that people will behave more cautiously and accept fewer risks when they feel threatened and conversely, they will behave more daringly and accept higher levels of risk when they feel safe and secure.

Organisations have attempted to decrease at-risk behaviour by targeting at-risk acts, exclusive of safe acts, and using corrective feedback, reprimands, or disciplinary actions to motivate behaviour change. This approach was useful but did not improve since it was a reactive approach and not proactive (Geller, 2001).

The impact of interventions on behaviour is caused by two very important factors, that is, the role that consequences play in behaviour, and the fact that safety is a continuous struggle against human nature. Geller suggests that human nature (or natural motivating consequences) typically encourages risk behaviour (Geller *et al.*, 1998). It is natural for humans to prefer comfort, convenience, and inefficiency. A typical example is the wearing of protective equipment, for example, wearing earplugs in a noisy environment for almost the entire shift, or a welder wearing a leather apron in a workshop at 40 degrees Celsius, which is against human nature.

Thus, historically, many organisations have focused on improving safety by addressing the work environment. Providing hazard identification facilities and providing better tools and equipment have worked well to improve safety. But many organisations have reached a plateau, continuing to rely solely on these approaches which will bring only marginal gains (Gillmore *et al.*, 2001).

The relationship between individual characteristics and safety behaviour could therefore facilitate understanding as to when and why people behave in a safe manner at work.

1.2.1 Self-esteem

Self-esteem, or the degree to which a person feels that he/she is a worthwhile individual is viewed by academics to be crucial in a person's well-being, emotional adjustment and vocational progress (Cook *et al.*, 1981).

According to Rosenberg (1979), Self-esteem means being satisfied with who you are, liking yourself, and respecting yourself for meeting your own standards and ascribed four components to high Self-esteem:

- the individual feels capable;
- the individual feels significant in that he/she matters to others;
- the individual feels powerful; and
- the individual feels unique and worthwhile in his/her own right.

Piers (1977) stated that literature claims that Self-esteem and Locus of Control are related but perhaps in a different manner for success and failure; more specifically, students with low Self-esteem may most need to attribute success externally to luck. Additionally, Piers finds some suggestion that there may be both gender and age differences related to Locus of control.

1.2.2 Self-efficacy

Self-efficacy can be described as the extent to which individuals believe that they can control their own behaviour. Researchers describe Self-efficacy as being commonly understood to be domain-specific, implying that an individual may have firm beliefs in different domains or specific situations of functioning.

General Self-efficacy as stated by Schwarzer and Mueller (1999), is aimed at a broad sense of personal competence to deal effectively with a variety of stressful situations. Bandura (1997) stated that the development of Self-efficacy is effected through learning and the modelling of behaviour. Modelling is mostly based on observation and instructional learning. This method of modelling utilises self-instructional thoughts to guide performance (Gist 1987). Self-efficacy is related to task performance in several studies (Wood *et al.*, 1990; Bandura & Locke, 2003).

Ballentine and Nunns (1998) stated that several studies (whilst not proving directionality of the relationship) proved that Self-efficacy is a significant predictor of future performance; the higher the level of Self-efficacy, the higher the level of task performance.

1.2.3 Work Locus of Control

Locus of Control can be described as a person's perception of control over his or her environment and the events in his or her life (Bender, 2001; Chubb, Fertman & Ross, 1997). Spector (1982) suggests that Locus of Control is a person's belief of the relationship between the environment and the person. According to Rotter (cited in Rothmann, 2000) and Bandura (1986), individuals develop interpretations of their

own behaviour, which researchers labelled as internal or external loci of control. De Vos *et al.* (2005) postulate that, when taking Rotter's theory into consideration, employees with an internal locus of control will go to greater lengths to control their environment, will seek new information more actively and use this information better.

Bosman and Buitendach (2005) explained Work Locus of Control as employees' beliefs that there is a relationship between how they behave versus results, whether it is reward or punishment. Employees with an internal locus of control believe that they can influence the results through personal effort, ability and initiative, whereas employees who have an external locus believe that forces outside of their control (for example, other people, social structures, luck or fate) dictate the outcomes (De Vos *et al.*, 2005).

As mentioned earlier, Piers (1977) claims that in literature, Self-esteem and Locus of Control are related but perhaps in a different manner for success and failure. However, Piers also found that there may be both gender and age differences related to Locus of Control.

1.2.4 Safety behaviour

Geller defined behaviour as acts or actions by individuals that can be observed by others. "In other words, behaviour is what a person does or says as opposed to what he or she thinks, feels, or believes" (Geller, 2001). To summarise, it means that an individual's act or actions should be done safely; for instance, safety shoes and safety glasses will not be worn in an office environment but instead are needed in other work areas like workshops.

Primedia identified three types of behaviour that concern safety, specifically conscious behaviour, habitual behaviour and unintentional behaviour (Primedia, 2003). Conscious behaviour in safety refers to actions where workers consciously comply with or violate safety procedures, similarly to when they are taking short-cuts to achieve certain goals. Habitual behaviour refers to actions that are being performed automatically, similarly to fastening a safety belt (or not) before driving a motor-car. Unintentional behaviour in safety refers to actions performed by workers

who are unconsciously incompetent, or a state in which the worker did not know that there was a better way to perform a specific task. Therefore, to improve safety performance in the workplace it is obvious that much emphasis should be placed on the types of behaviours.

Findley (2003) states that by also focusing on safety related behaviours before accidents happen, companies can make step change improvements in their safety performance.

On the basis of the abovementioned problem statement, the following research questions can be formulated:

- How Safety Behaviour, Self-esteem, Self-efficacy and Work Locus of Control and the relationships between these constructs are conceptualised in the research literature; and
- What the relationships between Safety Behaviour and Self-esteem, Self-efficacy and Work Locus of Control of workers are within the organisation; and
- Can Safety Behaviour predict Self-esteem, Self-efficacy and Work Locus of Control?

1.3 RESEARCH OBJECTIVES

1.3.1 General objectives

The general objective of this study is determining the relationship between Self-esteem, Self-efficacy, Work Locus of Control and Safety Behaviour.

1.3.2 Specific objectives

- To theoretically conceptualise Self-esteem, Self-efficacy, Work Locus of Control and Safety behaviour;
- To determine the relationship between Self-esteem and Safety Behaviour of employees in a specific business unit of a petro-chemical organisation; and
- To determine the impact of Self-esteem, Self-efficacy, Work Locus of Control on Safety Behaviour.

1.4 RESEARCH METHOD

The research method consists of two phases, namely a literature review and an empirical investigation.

1.4.1 Phase 1: Literature review

In the literature review, the focus is on previous research that has been done and on conceptualising individual characteristics (as measured by Self-esteem, Generalised Self-efficacy and Work Locus of Control) and Safety Behaviour.

The following databases were consulted:

- Internet
- EBSCOHOST
- Library Catalogues

1.4.2 Phase 2: Empirical study

1.4.2.1 Research design

The purpose of the research design of a study is to plan and structure a research project in such a way that it enhances the ultimate validity of the research findings

(Mouton & Marais, 1992). A cross-sectional survey design was used to reach the objectives. Use was also made of a correlation design (as explained by Huysamen, 1993). This design was used to assess interrelationships among variables at one point in time, without any planned intervention.

According to Shaughnessy and Zechmeister (1997), this design is ideally suited when the aim of the study is both predictive and descriptive by nature.

1.4.2.2 Study population

The total population of (N=201) in two departments of a specific business unit within the petro-chemical organisation was used. The population includes workers from different levels (ranging from semi-skilled to professional level). The lowest skilled employees have a level of literacy adequate enough to allow for valid completion of questionnaires.

1.4.2.3 Measuring instruments

- **Self-esteem**

Rosenberg's Self-esteem Scale will be utilised to measure participants' self-esteem. Ten items are arranged on a Likert-type scale with 1 being "strongly disagree" and 5 being "strongly agree". In previous research (Judge *et al.*, 2003) the instrument proved reliable with alpha-coefficients of 0.78, 0.80, 0.88, and 0.89. A typical item from this scale is "*I feel that I am a person of worth, at least on an equal plane with others*".

- **General Perceived Self-efficacy Scale (GPSES)**

The General Perceived Self-efficacy Scale (GPSES) (Schwarzer & Jerusalem, 1993) was used to measure participants' Generalised Self-efficacy. The scale was originally developed by Ralf Schwarzer and Matthias Jerusalem in 1981. The GPSES consists of 10 items. Schwarzer & Jerusalem (1993) found alpha coefficients varying from 0.75 to 0.90 for the GPSES. A

classical question from this scale is *"If someone opposes me, I can find means and ways to get what I want"*.

By confirmatory factor analyses, the scale was found to be uni-dimensional in all sub-samples. The scale is not only reliable; it has also been proven that the scale correlates positively with Self-esteem.

- **Work Locus of Control Scale (WLCS)**

Spector's Work Locus of Control Scale (1988) consisting of 16 items were used to measure Work Locus of Control within the work environment. Statements, varying from *"If you know what you want out of a job, you can find a job that gives it to you"* to *"To make a lot of money you need to know the right people"*, has to be answered by participants making use of a 5-point scale (varying from 1 = strongly disagree to 5 = strongly agree). Botha and Pienaar (2006) report alpha coefficients of 0.73 for the internal locus of control subscale and 0.73 for the external locus of control subscale, whilst Bosman and Buitendach (2005) reported an alpha coefficient of 0.82.

- **Safety Behaviour Scale**

The Safety Behaviour Scale will be specifically developed for this research study and includes eight questions to measure Safety Behaviour within the work place. The eight items are arranged on a Likert-type scale with 1 being "strongly disagree" and 5 being "strongly agree" including statements such as *"I always ensure that my equipment meet safety standards; I always raise the importance of safe behaviour at work; Our department has a good safety record and I was never reprimanded for unsafe behaviour"*.

1.4.2.4 Research procedure

Before the onset of this study the researcher obtained permission from the petrochemical company. The measuring battery was then compiled and distributed to employees, together with a cover letter explaining the purpose of this study, confirming anonymity and the confidentiality of the data collected, as well as general

logistical arrangements. The results were then analysed and feedback was given to the management team of the specific departments at a later date. Individual and general feedback would be provided on request.

1.4.2.5 Statistical analysis

All statistical analyses were done through the Statistical Consultation Services at the North-West University in Potchefstroom. The statistical analysis was carried out with the SPSS programme (SPSS Inc, 2009), making use of descriptive statistics, Cronbach's alpha and inter-item correlation coefficients, Pearson's product-moment correlation coefficients and multiple regression analysis. Cronbach's alpha coefficients and inter-item correlation coefficients were used to assess the internal consistency of the measuring items (Clark & Watson, 1995). Descriptive statistics (for example, means, standard deviations, skewness and kurtosis) were used to describe the data.

1.5 CHAPTER DIVISION

Chapter 1 comprises an introduction to the study. The problem statement briefly outlines the constructs and reasons for this study. Finally, the research methods are discussed. Chapter 2 deals mainly with the literature review and Chapter 3 with the statistical analysis of the empirical results of this study. The aim of the study is stated, after which the method is explained in depth. The results are discussed in Chapter 4. Chapter 5 deals with the conclusions, and limitations and recommendations for future studies are suggested concluding the study.

1.6 SUMMARY

In this chapter, an introduction to the research study was given. The problem statement briefly outlined the constructs and reasons for the study. Research objectives were given and the chapter was concluded by discussing the research methods.

In the next chapter, the literature review with regard to Self-esteem, Self-efficacy, Work Locus of Control and Safety Behaviour will be discussed. This presents the theoretical knowledge needed for better understanding.

CHAPTER 2

INDIVIDUAL CHARACTERISTICS AND SAFETY BEHAVIOUR IN A PETROCHEMICAL COMPANY

2.1 INTRODUCTION

Chapter 1 provided an introduction, a problem statement, the purpose of this study, including a discussion of the research methodology and procedure. In this chapter, Self-esteem, Self-efficacy, Work Locus of Control and Safety Behaviour, as well as the relationship amongst these constructs, will be conceptualised from the literature.

2.2 FACTORS TO FOCUS ON TO IMPROVE SAFETY

To develop a proper safety management system requires attention to three domains as illustrated in figure 1.1: the environment (equipment, tools and housekeeping), the person (knowledge, skills, abilities, intelligence, and personality) and behaviour (Geller *et al.*, 1998). It is well documented that in the previous century a great deal of emphasis was placed on improving "the environment" and "the person" (Geller *et al.*, 1998). In this study, the researcher will examine the influence of leadership and personality traits of employees on Safety Behaviour.

An individual's perception of risk includes factors such as psychology, sociology, and the anthropology of humans. It relates to the external, socio environment as well as the individual's beliefs as influenced by a cultural impact. It is well known that people adjust their risk-taking behaviour according to the perceived level of risk. This means that people will behave more cautiously and accept fewer risks when they feel threatened and conversely, they will behave more daringly and accept higher levels of risk when they feel safe and secure.

Organisations have attempted to decrease at-risk behaviour by targeting at-risk acts, exclusive of safe acts, and using corrective feedback, reprimands, or disciplinary actions to motivate behaviour change. This approach was useful but did not improve since it was a reactive approach and not proactive (Geller, 2001).

The impact of interventions on behaviour is caused by two very important factors: the role that consequences play in behaviour and the fact that safety is a continuous struggle against human nature. Geller suggests that human nature (or natural motivating consequences) typically encourages risk behaviour (Geller *et al.*, 1998). It is natural for humans to prefer comfort, convenience, and inefficiency.

According to Gilmore *et al.* (2001), many organisations have reached a plateau and continue to focus on addressing the environment and rely on these approaches that will bring only marginal gains. Providing hazard identification facilities and providing better tools and equipment have worked well to improve safety.

The researcher is of the opinion that the study of the relationship between individual characteristics and safety behaviour could facilitate understanding as to when and why people behave in a safe manner at work.

2.2.1 Individual factors to improve safety

2.2.1.1 Self-esteem

Self-esteem refers to the extent to which a person has a positive or negative view of himself, it therefore is a perception of a person's own worth based on self-evaluation (Coetsee, 2003). Kreitner and Kinicki (2007) define Self-esteem as a belief of one's own self-worth based on an overall self-evaluation.

The oldest adopted definition for Self-esteem comes from William James (1957) more than a century ago: "So our self-feeling in this world depends entirely on what we back ourselves to be and do. It is determined by the ratio of our actualities to our

supposed potentialities; a fraction of which our pretensions are the denominator and the numerator our success, thus:

$$\text{Self-esteem} = \frac{\text{Success}}{\text{Pretensions}}$$

Such a fraction may be increased as well by diminishing the denominator and by increasing the numerator” (James, 2005).

Morris Rosenberg (1979) defined Self-esteem as a positive or negative attitude toward a particular object: the self. High Self-esteem, as reflected in the scale items, expresses the feeling that one is “good enough.” The individual simply feels that he is a person of worth; he respects himself for what he is, but he does not stand in awe of himself nor does he expect others to stand in awe of him. He does not necessarily consider himself superior to others (Rosenberg, 1979)

Nathaniel Branden suggested that Self-esteem has two interrelated aspects: it entails a sense of personal efficacy and a sense of personal worth. It is the integrated sum of self-confidence and self-respect. It is the conviction that one is competent to live worthy of living (Branden, 1990)

It has been revealed by literature that people with high Self-esteem regard themselves as capable, possessing good skills and abilities and are acceptable to other people. Rosenberg also suggested that the relationship between low Self-esteem and other variables correlates with loneliness, anxiety, resentment, irritability, depression and an overall level of satisfaction with life (Rosenberg, 1979).

In summary of the abovementioned definitions, Self-esteem can be defined as how much value and self-worth people place on themselves. It can therefore be said that high Self-esteem may refer to an accurate, justified, balanced appreciation of one’s worth or value as a person and one’s successes and competencies. On the other

hand, it can also refer to an inflated, arrogant, grandiose, unwarranted sense of arrogant superiority over others.

It can also be said that a person with low Self-esteem will have an accurate, well-founded understanding of their shortcomings as a person or a distorted or even pathological sense of insecurity and inferiority.

A deduction can therefore be made that in the workplace, people who feel good about themselves would perform well at work. Research has also shown that the relationship between self-esteem and work performance has revealed a high variability of the reported nature of this relationship (Tharenou, 1979).

As this study covers the relationship between individual characteristics and safety behaviour in the workplace, it must be noted that Self-esteem whether it be positive or negative, may also contribute to safe behaviour or unsafe behaviour by an individual. The question will still be asked whether general Self-esteem can be improved.

Branden proposes in figure 2.1 six pillars of Self-esteem which may improve an individual's perception of himself.

Figure 2.1: Branden’s six pillars of Self-esteem

1) Live consciously	Be actively and fully engaged in what you do and with whom you interact.
2) Be self-accepting	Don’t be overly judgmental or critical of your thoughts and actions.
3) Take personal responsibility	Take full responsibility for your decisions and actions in life’s journey.
4) Be self-assertive	Be authentic and willing to defend your beliefs when interacting with others, rather than bending to their will to be accepted or liked.
5) Live purposefully	Have clear near-term and long-term goals and realistic plans for achieving these to create a sense of control in your life.
6) Have personal integrity	Be true to your word and your values.

Source: Excerpted and adapted: Branden (1990)

Eisenberger and Rhoades (2001) also provided an appropriate comparison in table 2.1 of the differences between Self-esteem and Self-efficacy.

Table 2.1: Differentiation between Self-esteem and Self-efficacy

Self-esteem	Self-efficacy
Judgment of self-worth	Judgment of personal capabilities
Regulates happiness	Regulates acquisition of knowledge and skills
Self-liking	Self-discipline
Personal accomplishments	Performance attainment
Predicts satisfaction	Predicts effort and motivation
Product of social evaluation	Product of reflection
Produces contentment	Produces goal achievement

(Source: Eisenberger and Rhoades, 2001:7)

2.2.1.2 Self-efficacy

Bandura (1997) defines Self-efficacy as a person's beliefs about his capabilities to produce a designated level of performance to exercise influence over events that shape his life. It is further postulated by Bandura (1997) that Self-efficacy is an estimate of one's ability to orchestrate performance through successfully executing behaviours that are required to produce desired outcomes. This merely means that Self-efficacy can be seen as the individual's belief that he or she is capable of performing a task.

House *et al.* (2004) define Self-efficacy as a person's appraisal of his ability to successfully perform particular tasks and gain situational control. According to Geller (2001), Self-efficacy is the idea that "I can do it". Gist (1987) postulates that Self-efficacy arises from the gradual acquisition of complex cognitive, social, linguistic, and/or physical skills through experience.

Theory and research conducted by Bandura (1997) also suggest that Self-efficacy results in differences in how individuals think and act. Accordingly, people with a low sense of Self-efficacy results in them having low Self-esteem and could be associated with anxiety, depression and a sense of helplessness whereas people with a strong sense of Self-efficacy will smooth the progress of cognitive processing and enhanced performance, achievement and decision-making effectiveness (Schwarzer & Mueller, 1999).

Schwarzer (2001) stated that general Self-efficacy is aimed at a broad sense of personal competence to deal effectively with a variety of stressful situations. A further claim is made by Bandura (1997) that the development of Self-efficacy is developed through learning and modelling of behaviours.

Schwarzer & Mueller (1999) suggest that leader behaviours, task setting and goal setting, positively influenced Self-efficacy expectations. Sherer *et al.* (cited in Robbins, 2001) also claim that similar results influencing an entrepreneurial spirit (leadership role), significantly affected subjects' level of Self-efficacy. In addition, Frayne and Latham (cited in Robbins, 2001), also found self-management

techniques, positively influenced Self-efficacy. The findings proved that research supports the positive effects of self-management on Self-efficacy. The perceptions of efficacy are enhanced when a person is in a position to experience confidence through greater self-control.

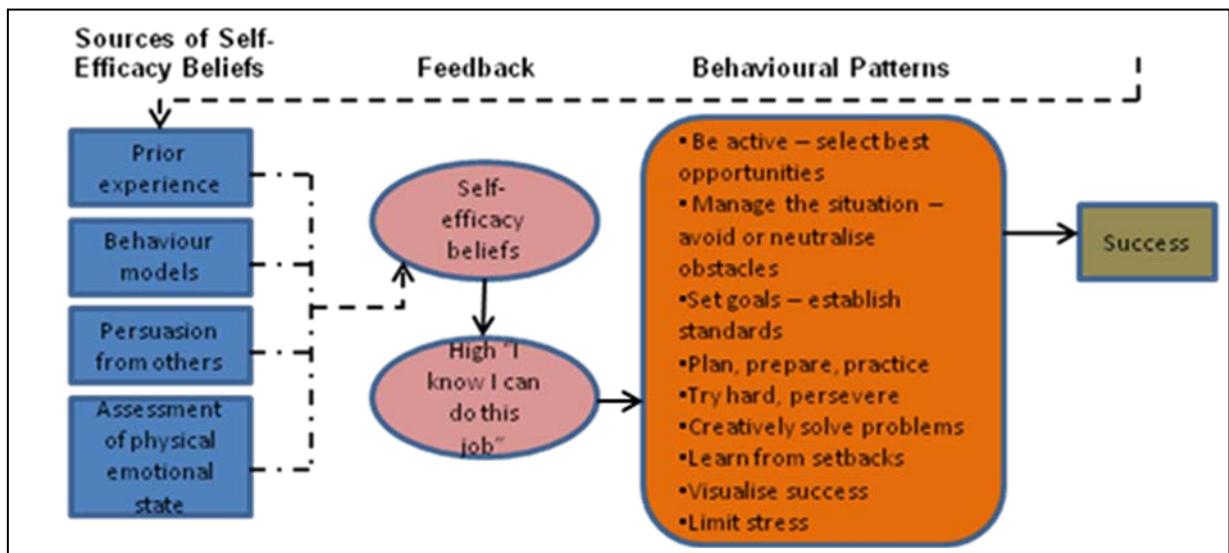
It is further illustrated by research that Self-efficacy perceptions are influenced by particular leadership behaviours. It also may be concluded from research that the use of self-leadership strategies influences Self-efficacy perceptions of a specific risk. Prussia *et al.* (1998) therefore deduced that self-leadership strategies have a direct, positive effect on the level of Self-efficacy. Studies have also linked Self-efficacy to improved attendance behaviour, increased task behaviour and academic achievement (Multon *et al.*, cited in Robbins, 2001). It can therefore also be suggested that Self-efficacy has a direct, positive effect on Safety Behaviour.

Bandura (1997) also suggests that people who have high Self-efficacy choose to perform more challenging tasks. It can also be said that these people set high goals for themselves and tend to stick to them. Thus, an assumption can be made that people with a higher Self-efficacy will be more confident in their ability to complete tasks effectively as opposed to those who have a low Self-efficacy would have a tendency to give up.

Theory and research conducted by Bandura (1997) suggest that Self-efficacy results in differences in how individuals think and act. Accordingly, people with a low sense of Self-efficacy results in low Self-esteem and could be associated with anxiety, depression and a sense of helplessness. Taking this research into account, it could be assumed that the level of a person's Self-efficacy may be a contributor to unsafe behaviour in the workplace.

Figures 2.2 and 2.3 illustrate the effects of high- and low Self-efficacy which may lead to success or failure.

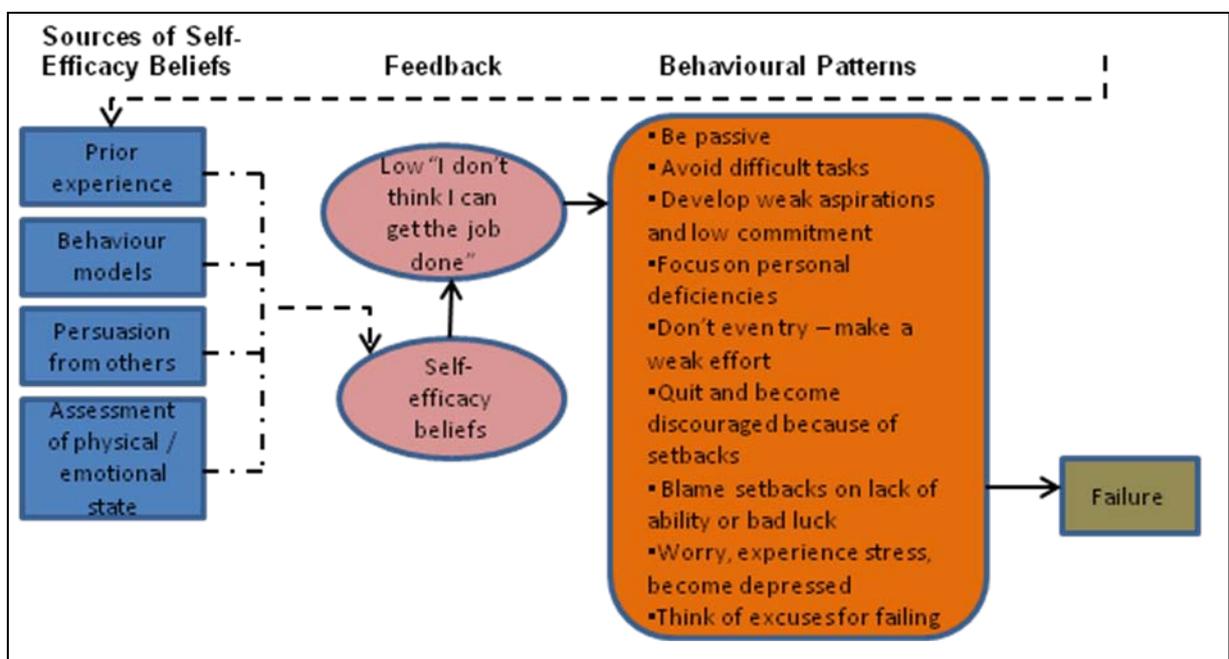
Figure 2.2: Effects of high Self-efficacy



(Source: Kreitner & Kinicki, 2007)

It is clear from figure 2.3 that an individual with high Self-efficacy has distinct behavioural patterns which will lead to success. The researcher therefore makes the assumption that such an individual will also display good safety behaviour.

Figure 2.3: Effects of low Self-efficacy



(Source: Kreitner & Kinicki, 2007)

Figure 2.4 gives a clear view that an individual with low Self-efficacy displays behavioural patterns which will lead to failure. The researcher therefore is of the opinion that such an individual will not display good Safety Behaviour.

2.2.1.3 Work Locus of Control

Locus of Control can be described as a person's perception of control over his environment and the events in his life (Bender, 2001; Chubb *et al.*, 1997). Spector (1982) suggests that Locus of Control is a person's belief of the relationship between the environment and the person. According to Rotter (cited in Rothmann, 2000) and Bandura (1986), individuals develop interpretations of their own behaviour, which researchers labelled as internal or external loci of control. De Vos *et al.* (2005) postulate that when taking Rotter's theory into consideration, employees with an internal locus of control will go to greater lengths to control their environment, will seek new information more actively and use this information better.

It can therefore be said that Locus of Control refers to a stable personality trait that describes the extent to which people attribute the cause or control of events to themselves (internal orientation), or to the external environmental factors such as fate or luck (Kren, cited in Robbins, 2001; Rotter, cited in Rothmann, 2000).

Locus of Control was developed by Rotter as a construct and personality variable, denoting the degree to which individuals realise that they control or are controlled by their environment. Furthermore, it is indicated that a person's Locus of Control orientation is the single determinant of the source of behaviour. There are, however, other personality factors, established by reciprocal determinants, which also play a role in the causation of behaviour.

Locus of Control may be either external, where an individual believes the environment or external factors control their fate, or it may be internal, where an individual believes that what he does have a major impact on his environment. In other words, internals are people who believe that they control their destinies whereas externals believe their lives are controlled by outside forces. It can therefore

be said that a person's perception of his or her own fate may be termed 'Locus of Control'.

Studies have revealed that when comparing internals with externals, that individuals scoring higher in externalities are less satisfied with their jobs, have increased absenteeism and are more alienated from their work and less involved in their jobs than internals.

Internals believe that hard work will result in success and that failure is an individual responsibility. It is also believed that they are more likely to occupy managerial positions. On the flip side, externals do not believe that success or failure is related to ability or effort (Kren, cited in Robbins, 2001); they are more likely to accept efforts by others to influence them (Anderson, cited in Robbins, 2001), and would respond more positively to a directive leadership style.

According to Spector (1982), externals fail to acknowledge or expect that their own actions will lead to the attainment of rewards or the avoidance of punishment. In addition to this, is the suggestion that internals are inclined towards finding ways to cope with stress, whereas externals are more likely to accept stressful conditions rather than attempt to cope with these conditions. It is generally accepted that internals have greater aspirations than externals for personal control in the work situation and are more likely to find ways of overcoming stress.

After Spector (1988) compiled the Work Locus of Control Scale, he held the belief that employees with an internal Work Locus of Control will perform better in the workplace. He suggested that since they believed in themselves and their abilities they would experience higher levels of job security.

I believe that since Locus of Control is a learned behaviour, that employees with an external locus of control can be mentored, coached and directed to change their beliefs and to eventually have an internal locus of control. Scott (2007) suggests that it is possible for an individual to change from an external locus of control to an internal locus of control. A person must "realise that you always have a choice to

change your situation. Even if the only change you can make is in your attitude, you always have some choices”.

2.2.1.4 Safety Behaviour

Geller defined behaviour as acts or actions by individuals that can be observed by others. “In other words, behaviour is what a person does or says as opposed to what he or she thinks, feels, or believes” (Geller, 2001). To summarise, it means that an individual’s act or actions should be done safely, for example, safety shoes and safety glasses will not be worn in an office environment but instead are needed in other work areas like workshops.

Primedia identified three types of behaviour that concern safety, specifically conscious behaviour, habitual behaviour and unintentional behaviour (Primedia, 2003). Conscious behaviour in safety refers to actions where workers consciously comply with or violate safety procedures, similarly to when they are taking short-cuts to achieve certain goals. Habitual behaviour refers to actions that are being performed automatically, similarly to fastening a safety belt (or not) before driving a vehicle. Unintentional behaviour in safety refers to actions performed by workers who are unconsciously incompetent, or a state in which the worker did not know that there was a better way to perform a specific task. Therefore, to improve safety performance in the workplace it is obvious that a great deal of emphasis should be placed on the types of behaviours.

Findley stated that, by also focusing on safety related behaviours before accidents happen, companies can make step change improvements in their safety performance (Findley, 2003).

Employees contribute to a culture of safety excellence by being actively engaged in the safety improvement process. They can only do this if the culture allows them to feel positive about themselves, their co-workers, and their organisation. They believe they can make a difference and are willing to go beyond their normal job to make a difference. Finally, employees then behave in ways that enhance the safety of themselves and others. This includes behaving safely on the job and also actively

influencing the behaviour of their peers and supervisors through actively caring (French & Geller, 2000).

2.3 SAFETY AT WORK AND INCIDENTS

All human activities involve hazards. Sometimes these are clear and predictable dangers of the kind associated with hazardous technologies. Other dangers arise from human behaviour. Since survival, security and safety are dominant human instincts; we build defences to prevent known hazards from causing losses: loss of life, property, assets, money, the environment, and more. Generally, we rely on multiple defences since no one barrier is ever perfect, or is proof against all kinds of danger.

The evolution of such defences-in-depth is clearly seen by studying military fortifications, but they are also a crucial feature of modern hazardous technologies (Reason, 1997).

Flemming and Lardner put it that, "Whilst a focus on changing unsafe behaviour into safe behaviour is appropriate, this should not deflect attention from analysing why people behave unsafely. To focus solely on changing individual behaviour without considering necessary changes to how people are organised, managed, motivated, rewarded and their physical work environment, tools and equipment can result in treating the symptoms only, without addressing the root causes of unsafe behaviour" (Flemming & Lardner, 2002).

2.3.1 Causes of incidents

Safety, which is one of the six values of this company, has slowly started to plateau over the last three years after the implementation of behavioural based safety. The Following is a list of, but not limited to, causes identified by the U.S Chemical Safety and Hazard Investigation Board which look at Process Safety Management.

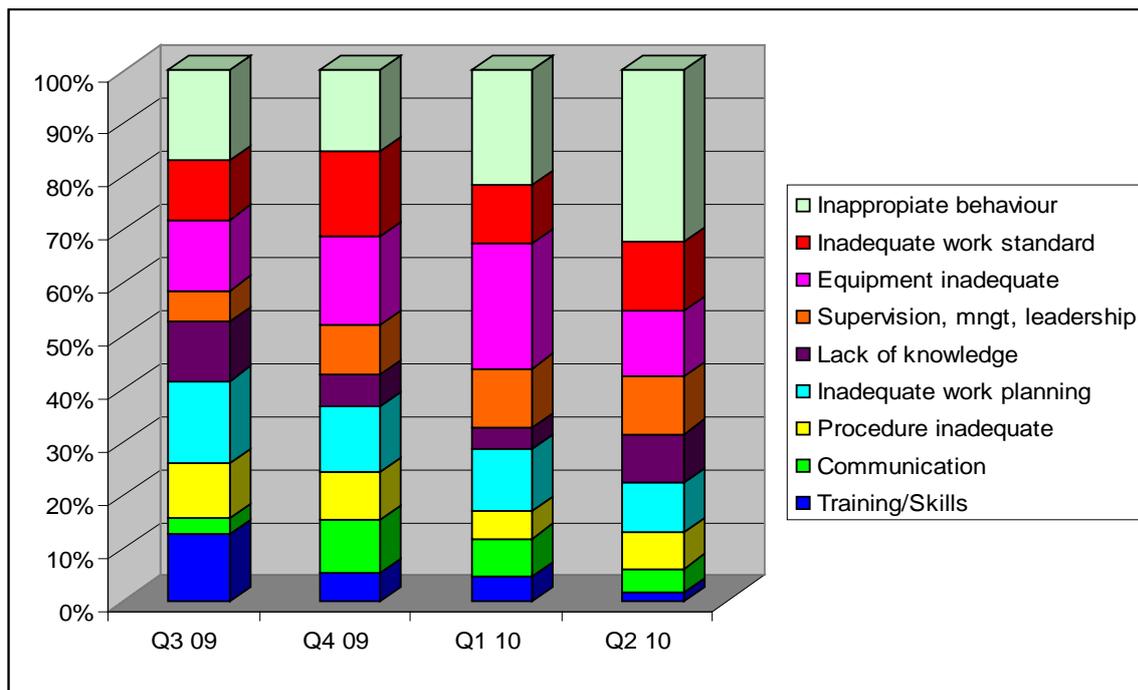
Table 2.2: Causes of incidents

No.	Type of incident cause
1	Inadequate hazard identification
2	Inadequate hazard evaluation
3	Inadequate procedures for storage/handling of reactive chemicals
4	Inadequate training for storage/handling of reactive chemicals
5	Inadequate management of change (MOC) system to identify/evaluate reactivity hazards
6	Inadequate process design for reactive hazards
7	Inadequate design to prevent human error
8	Inadequate company-wide communication of hazards
9	Inadequate emergency relief system design
10	Inadequate safe operating limits
11	Inadequate near miss/incident investigation
12	Inadequate inspection/maintenance/monitoring of safety critical devices in reactive chemical service

Figure 2.4 illustrates the work related incidents, but not limited to, which were caused by the factors as depicted in figure 2.5: Inappropriate behaviour, Inadequate work standards, Equipment inadequate, Supervision, management and leadership, Lack of knowledge, Inadequate work planning, Communication, and Training/Skills.

These causes correlate with the causes of incidents as identified by the U.S Chemical Safety and Hazard Investigation Board which are listed in table 2.2.

Figure 2.4: Causes of injuries



It is clearly illustrated in figure 2.5 that there is an increase in inappropriate behaviour for the period Quarter 3 of 2009 to Quarter 2 of 2010 in the organisation. This is directly related to employee behaviour and their attitude to safety in the workplace. There is also a clear indication that the influence of supervision, management or leadership are on the increase since Quarter 3 of 2009. On the positive side, a lack of training skills are on a downward slope, indicating that there is an improvement in the level of competence within the organisation.

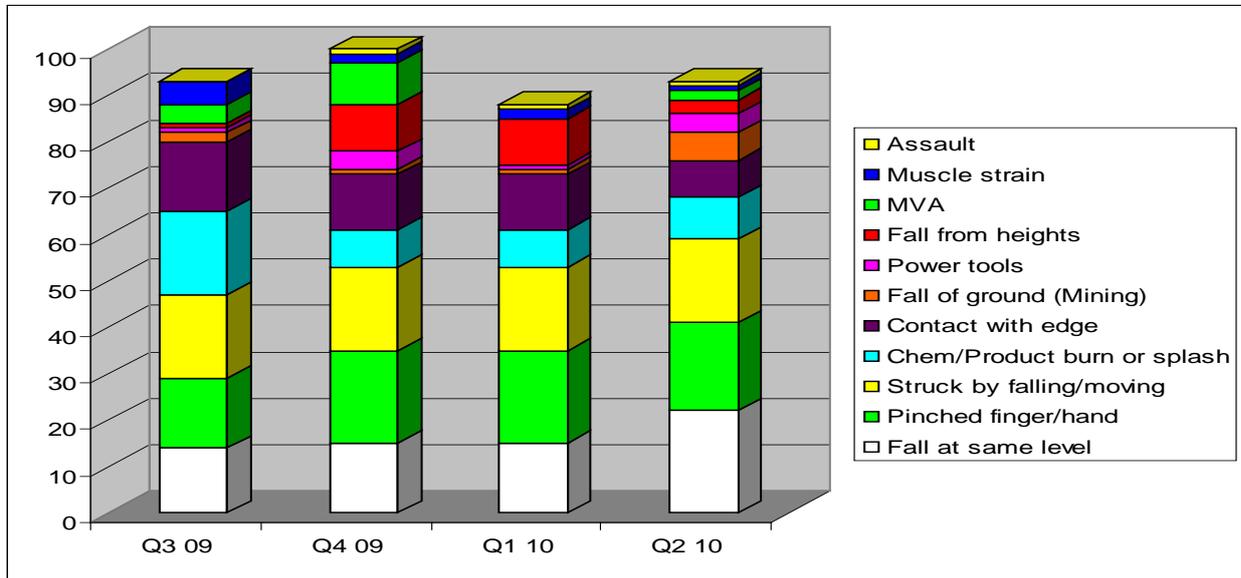
2.3.2 Consequences of injuries

The U.S Chemical Safety and Hazard Investigation Board lists the following, but not limited to, as consequences of injuries: Fire, explosions, hazardous liquid spills, toxic gas releases, or any combination of such.

Following are a number of consequences that resulted from the causes mentioned in figure 2.5: Assault, Muscle strain, MVA (motor vehicle accidents), Fall from heights, Power tools, Fall of ground (Mining), Contact with edge, Chemical / product burn or

splash, Struck by falling / moving objects, Pinched finger / hand and Fall at same level.

Figure 2.5: Consequences of incidents



There is a gradual increase in the number of fall at same level from quarter 3 2009 to quarter 2 of 2010, which can possibly be linked to a person’s engagement at work. Assaults in the workplace also happened consistently across all the quarters since the third quarter of 2009. Motor vehicle accidents also increased from quarter 3 of 2009 to quarter 2 of 2010.

Taking the above in account, it moved the researcher to believe that it was not a safety problem but also the behavioural role of the employee in these incidents.

2.4 SUMMARY

In Chapter 2, individual characteristics and Safety Behaviour are defined as viewed by various researchers. In addition, an overview is provided of the precursors of Safety Behaviour, and the influence of individual characteristics on Safety Behaviour. In this chapter, a discussion is provided of Self-esteem, Generalised Self-efficacy, Work Locus of Control and Safety Behaviour. It is demonstrated that the three

dependent variables applicable in this study, hold important implications for Safety Behaviour.

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In the next chapter, the empirical study will be described in detail providing reference to the research design, study population, measuring battery, approach to statistical analysis and research procedure. The first specific objective, which is to conceptualise Safety Behaviour, Self-esteem, Self-efficacy and Work Locus of Control, as well as the relationship between these constructs from the literature, has been accomplished.

CHAPTER 3

EMPIRICAL STUDY

3.1 INTRODUCTION

In the previous chapter, Safety Behaviour, Self-esteem, Self-efficacy and Work Locus of Control, as well as the relationship among these constructs, were conceptualised from the literature.

In this chapter, the process used for the empirical research, will be discussed. The choice and composition of the research objectives, research design, study population, and measuring instruments, approach to the scoring and interpretation of the measuring instruments, as well as statistical analyses, will be conferred. Lastly, the research hypotheses will be formulated.

3.2 OBJECTIVES OF THE EMPIRICAL STUDY

The general objective of this study is to determine the relationship between Safety Behaviour and individual characteristics (as measured by Self-esteem, Self-efficacy and Work Locus of Control) of employees in an organisation. Furthermore, it will be determined whether Safety Behaviour can predict Self-esteem, Self-efficacy and Work Locus of Control.

The empirical objectives of the study are to determine:

- Safety Behaviour within an organisation;
- The relationship between Self-esteem, Self-efficacy, Work Locus of Control and Safety Behaviour within an organisation.
- The impact of Self-esteem, Self-efficacy, Work Locus of Control on Safety Behaviour within an organisation

3.3 STUDY POPULATION

The study was carried out at a petrochemical company within South Africa, utilising the total population of managers, supervisors and employees within the company. The study population were all members of the petrochemical company (N = 201). In total, 140 questionnaires were handed out of which 121 were returned, including 5 scratched questionnaires. Therefore, only 116 questionnaires could be used for this study. The sample represents a response rate of 60% and the biographical information of the 116 respondents is listed in table 3.1.

Table 3.1: Biographical characteristics of the study population (N = 116)

Biographical details	Category	Number (N) of respondents	Percentage %
Department	1	60	51.7
	2	56	48.3
Number of years service	< 2 years	19	16.4
	2-4 years	25	21.6
	5-9 years	16	13.8
	10-14 years	4	3.4
	15-19 years	2	1.7
	20-24 years	17	14.7
	> 24 years	33	28.4
Job Level	Below Level 8	46	42.2
	Level 8	36	33.0
	Level 7	20	18.3
	Level 6	4	3.7
	Level 6C	3	2.8
Gender	Male	112	96.6
	Female	4	3.4
Qualification	< Grade 12	28	24.3
	Grade 12	64	55.7
	Certificate	13	11.3
	Diploma	9	7.8
	Degree	1	0.9
Age	<24	12	10.3
	25-35	37	31.9
	36-45	23	19.8
	46-55	32	27.6
	55+	12	10.3

**Table 3.1: Biographical characteristics of the study population (N = 116)
(continued)**

Home Language	English	8	6.9
	Xhosa	5	4.3
	Zulu	13	11.2
	Sotho	36	31.0
	Afrikaans	49	42.2
	Others	5	4.3
Race	Black	61	52.6
	White	2	1.7
	Coloured	4	3.4
	Indian	48	41.4
	Other	1	0.9

3.4 MEASURING BATTERY

In this section, a discussion of the various measuring instruments follows. Reference will be made to the rationale and development, description, administration, scoring, interpretation, validity and reliability of the respective measuring instruments.

- ***General Perceived Self-efficacy Scale (GPSES)***

The General Perceived Self-efficacy Scale (GPSES) (Schwarzer & Jerusalem, 1993) was used to measure participants' generalised self-efficacy. The scale was originally developed by Matthias Jerusalem and Ralf Schwarzer in 1981. The GPSES consists of 10 items. Schwarzer and Jerusalem (1993) found alpha coefficients varying from 0.75 to 0.90 for the GPSES. By confirmatory factor analyses, the scale was found to be uni-dimensional in all subsamples. The scale is not only reliable; it has also been proven that the scale correlates positively with self-esteem and optimism, and negatively with anxiety, depression and physical symptoms.

- ***Work Locus of Control Scale (WLCS)***

The Work Locus of Control Scale of Spector (1988) consists of 16 items and was used to measure work locus of control within the work environment. Statements, varying from "If you know what you want out of a job, you can

find a job that gives it to you" to "To make a lot of money you need to know the right people", has to be answered by participants making use of a 5-point scale (varying from 1 = strongly disagree to 5 = strongly agree). Botha and Pienaar (2006) report alpha coefficients of 0.73 for the internal locus of control subscale and 0.73 for the external locus of control subscale, whilst Bosman and Buitendach (2005) reported an alpha coefficient of 0.82.

- **Self-Esteem**

Self-esteem will be measured with ten items. The items are arranged on a Likert-type scale with 1 being "strongly disagree" and 5 being "strongly agree". In previous research (Judge *et al.*, 2003) the instrument proved reliable with alpha-coefficients of 0.78, 0.80, 0.88, and 0.89. A typical item from this scale is *"I feel that I am a person of worth, at least on an equal plane with others"*.

- **Safety Behaviour**

The Safety Behaviour Scale utilised was specifically developed for this research study and includes 8 questions to measure safety behaviour within the workplace. Eight items are arranged on a Likert-type scale with 1 being "strongly disagree" and 5 being "strongly agree" including statements such as *"I always ensure that my equipment meet safety standards; I always raise the importance of safe behaviour at work; Our department has a good safety record and I was never reprimanded for unsafe behaviour."*Reliabilities will be determined by the research analysis.

3.5 RESEARCH METHOD

Each of the participants in the study was required to complete a questionnaire. The questionnaire included a covering letter, detailing the purpose of the study and ensuring respondents' confidentiality. Anonymity was ensured as subjects were not required to write their names on the questionnaire. This letter explained that the survey was of a voluntary nature and guaranteed respondents that no person in the organisation would have access to their individual responses. In addition to the

covering letter, the questionnaire contained two sections which included the following:

- Section A – Biographical questionnaire;
- Section B – Self-esteem, Self-efficacy Scale, Work Locus of Control Scale and Safety Behaviour.

The respondents were requested to complete the questionnaire and return it, within one week, to the coordinator.

- **Research design**

The purpose of research design is to plan and structure a research project in such a way that it enhances the ultimate validity of the research findings (Mouton & Marais, 1992). A cross-sectional survey design was used to reach the objectives. Use was also made of a correlation design (as explained by Huysamen, 1993). This design was used to assess interrelationships among variables at one point in time, without any planned intervention. According to Shaughnessy and Zechmeister (1997), this design is ideally suited when the aim of the study is both predictive and descriptive by nature.

- **Preliminary arrangements**

Before the research started, permission had to be requested from the organisation's executive committee and its psychology forum. Meetings were scheduled with the operational managers involved to ask their co-operation and permission to use their employees in the study.

- **Ethical aspects**

After the necessary permission was granted, direct contact sessions were arranged with all the persons that indicated that they would like to participate in the research. The nature and goal of the research were explained, the different constructs were explained, and put in relation to the value it held for the person and organisation. The fact that all questionnaires were to be conducted anonymously was emphasised and the total time and

arrangements were explained to candidates. Lastly, the candidates were asked to indicate if they would voluntarily participate in the study.

- **Administration of the measuring instruments**

A contact person was identified in two departments within a petrochemical business unit, who would take responsibility for the administration of the questionnaires. These contact persons obtained the co-operation of the respondents and helped with any questions they had. Since it was an arrangement with different types of establishments the respondents completed the questionnaires at pre-arranged times. They had approximately one week to complete and hand it back to the contact persons.

- **Data capturing**

After the completed questionnaires were handed in, the data were captured in an MS Excel spreadsheet, statistically processed and conclusions were drawn.

- **Feedback**

Feedback was also provided to the management of the different establishments regarding the level of job satisfaction of their staff. Individual and general feedback was provided to those who requested it.

3.6 STATISTICAL ANALYSIS

The statistical analysis was carried out with the SPSS programme (SPSS Inc, 2003), making use of descriptive statistics, Cronbach's alpha and inter-item correlation coefficients, Pearson's product-moment correlation coefficients and multiple regression analysis. Cronbach alpha coefficients and inter-item correlation coefficients were used to assess the internal consistency of the measuring items (Clark & Watson, 1995). Descriptive statistics (for example, means, standard deviations, skewness and kurtosis) were used to describe the data.

A multiple regression analysis was conducted to determine the proportion of variance in the dependent variable leadership that is predicted by the independent variables (self-esteem, self-efficacy and work locus of control). The effect size in the case of multiple regression is given by the following formula (Steyn, 1999):

$$f^2 = R^2 / 1 - R^2$$

A cut-off point of 0.35 (large effect) (Steyn, 1999) was set for the practical significance of f^2 . Cohen (1988) suggested the following guidelines for effect size:

$f^2 = 0,02 < 0.15$ - small effect

$f^2 = 0,15 < 0.35$ - medium effect

$f^2 = 0,35 < -$ large effect

3.7 RESEARCH HYPOTHESES

The following research hypotheses are formulated for the purpose of this study:

- H1: A reliable instrument to measure the psychometric properties of a safety behaviour scale was developed for this study.
- H2: A practically statistically significant relationship exists between individual characteristics and safety behaviour.
- H3: The level of individual characteristics serves as significant predictors of safety behaviour.

3.8 SUMMARY

The procedure for the empirical study that was followed was discussed in this chapter, specifically referring to the measuring instruments, the study population, the research method and statistical analysis. The chapter concludes with the formulation of the research hypotheses.

Chapter 4 focuses on the results of the empirical research and will be discussed forthcoming.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 INTRODUCTION

In this chapter, the results of the empirical research will be reported and discussed. The statistical analysis was carried out with the SPSS programme (SPSS Inc, 2003) and Statistica (2009). Cronbach alpha coefficients and inter-item correlation coefficients were used to assess the internal consistency of the measuring items (Clark & Watson, 1995). Descriptive statistics (for example, means, standard deviations, skewness and kurtosis) were used to describe the data.

The study population were all members of the petrochemical company (N = 201). In total 140 questionnaires were handed out of which only 121 were returned, including 5 scratched questionnaires; therefore, only 116 questionnaires could be used for this study. The sample represents a response rate of 60%.

The correlation coefficient can be considered an effect size. The interpretation of r is as follows:

- ± 0.1 : small effect, no practically significant correlation;
- ± 0.3 : medium effect, practically visible correlation; and
- ± 0.5 : large effect, practically significant correlation (Field, 2009).

4.2 RELIABILITY OF THE MEASURES AND DESCRIPTIVE STATISTICS

- **Descriptive statistics of the measuring instruments**

One of the objectives of the study was to determine the psychometric properties of the measuring instruments used, in particular the Safety Behaviour Scale that was developed for this study. The descriptive statistics

and psychometric properties of the scales used in this study are presented in Table 4.1.

Table 4.1: Descriptive statistics and psychometric properties of the scales used in this study

	Mean	Std. Deviation	Skewness	Kurtosis	Inter item correlation	Cronbach Alpha
Generalised Self-efficacy	3.98	0.51	-0.39	0.83	0.37	0.85
Work Locus of Control – Internal	3.96	0.58	-1.43	4.98	0.31	0.75
Work Locus of Control – External	2.72	0.89	0.19	-0.77	0.46	0.87
Self-esteem	2.47	0.92	0.32	-0.68	0.37	0.74
Safety Behaviour	4.36	0.60	-1.29	2.09	0.47	0.85

Inspection of table 4.1 highlights that acceptable Cronbach Alpha coefficients were obtained for all of the measuring instruments used in this study, in particular the Safety Behaviour Scale compared to the guideline of $\alpha > 0.70$ (Nunnally & Bernstein, 1994). The inter item correlations of all scales compared very well to the guideline of $0.15 \leq r \leq 0.05$ (Cohen, 1988). The External Work Locus of Control sub-scale and the Safety Behaviour Scale showed high skewness and Kurtosis, indicating that the data were not normally distributed.

4.3 RELATIONSHIPS BETWEEN VARIABLES

Another objective of the study was to determine the relationships between the variables used in this study. The correlation matrix of all the scales used in this study is presented in Table 4.2.

Table 4.2: Correlation coefficients between the measuring instruments

Instruments	Self-Efficacy	Work Locus of Control - I	Work Locus of Control - E	Self-Esteem
Generalised Self-efficacy	-			
Work Locus of Control – Internal	0.51**	-		
Work Locus of Control – External	-0.12	-0.27**	-	
Self-esteem	-0.20*	-0.31**	0.50**	-
Safety Behaviour	0.34**	0.49**	-0.31**	-0.16

Closer inspection of Table 4.2 revealed that positive statistically significant relations exist between Generalised Self-efficacy and an Internal Work Locus of Control (with a large effect size) and Generalised Self-efficacy and Safety Behaviour (with a medium effect size). Scrutiny of Table 4.2 also indicates that a positive statistically significant relationship exists between an Internal Work Locus of Control and Safety Behaviour (with a medium effect size) on the one hand while a negative statistically significant relationship were observed between an Internal work Locus of Control and External Work Locus of Control (with a small effect) and Self-esteem (medium effect size). An External Work Locus of Control was also positive statistically significantly related to Self-esteem (with a large effect size) and negatively statistically significantly related to Safety Behaviour (with a medium effect size). Self-esteem was negatively related to Safety Behaviour. However, this relationship proved to be statistically insignificant.

4.4 REGRESSION ANALYSIS

A regression analysis was done to determine the impact of individual characteristics on safety behaviour. The results of the regression analysis are presented in Table 4.3.

Table 4.3: Stepwise Multiple Regression Analyses with Safety Behaviour as Dependent Variables

	B	Std Error of β	t	p
Intercept	2.48	0.51	4.86	0.00
Generalised Self-efficacy	0.20	0.11	1.77	0.08
Work Locus of Control – Internal	0.34	0.10	3.27	0.00
Work Locus of Control – External	-0.13	0.07	-1.89	0.06
Self-esteem	0.04	0.07	0.55	0.59
R				0.49
R²				0.24
<i>Effect size</i>				
$f^2 = 0,02 < 0.15$ - small effect		f^2		0.32
$f^2 = 0,15 < 0.35$ - medium effect				
$f^2 = 0,35 < -$ large effect				

Inspection of Table 4.3 indicated that 24% of the variance in Safety Behaviour was explained by generalised Self-efficacy, Internal and External Work Locus of Control and Self-esteem. However, in line with the stronger relationship that was observed in this study, only an Internal Work Locus of Control ($\beta = 0.34$; $t = 3.27$; $p \leq 0.00$) proved to be a statistically significant predictor of the dependent variable, Safety Behaviour.

4.5 DISCUSSIONS

The aim of this study was to determine the psychometric properties of the scales used in this study. The results indicated that the measures proved to be reliable. Relative high mean scores were obtained for most of the variables except for an External Work Locus of Control as well as for Self-esteem, indicating that the sample does take responsibility to some extent for outcomes with relative low self-valuations. The relative low standard deviations (*SD*) also indicated that most of the responses are clustered around the mean. Sound mean-item correlations as well as acceptable reliabilities were also observed indicating the sound psychometric properties of the scales used in this study. Therefore, the first hypothesis is accepted.

The study was also undertaken to determine the relationship between individual characteristics and Safety Behaviour at work. Results obtained confirmed the very strong positive relationships that exist between Safety Behaviour, Generalised Self-efficacy and an Internal Work Locus of Control. These relationships also proved to be medium and large respectively, in a practical sense. However, the results also indicated that Safety Behaviour at Work also proved to be negatively related to an External Work Locus of Control with medium practical significance and Self-esteem. This means that those members in the sample who believed that they can successfully complete what is expected from them and those who take responsibility for the actions compared to those who blame the work environment for outcomes and who do not value themselves very much are more likely to exhibit safety behaviour at work. Tharenou and Marker (1984) found that most research evidence from similar field studies reported a large number of low, bivariate correlations between Self-esteem and measures of job characteristics, behaviours, and attitudes.

Finally, the researcher was interested in the impact of individual characteristics on Safety Behaviour at Work. Some 24% of the variance in Safety Behaviour was explained by individual characteristics. However, in line with the stronger relationship that was observed in this study, only an Internal Work Locus of Control proved to be a statistically significant predictor of Safety Behaviour. Labuschagne (2005) noted that a person with an internal locus of control is able to distinguish between causes and consequences as a result of his or her own behaviour.

4.6 SUMMARY

In this chapter, the results of the research were discussed and reported. The reliability coefficient and descriptive statistics of the measuring instruments were reported. The correlations and practical significance between Self-esteem, Self-efficacy, Work Locus of Control and Safety Behaviour were provided. Findings in the research have shown that a practically significant relationship does exist between Safety Behaviour and External Work Locus of Control.

In conclusion, all empirical objectives and hypotheses have been answered and reasoned. In Chapter 5, conclusions will be made regarding the literature findings and the results of the empirical investigations. The limitations of this research will be discussed and recommendations for the organisation, as well as future research, will be proposed.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In this chapter, conclusions regarding the theoretical and empirical objectives are made. The limitations of the research are emphasised and recommendations are made to the petrochemical company in which the research took place, as well as for future research.

5.2 CONCLUSIONS

Chapter 4 provided a discussion of the results of the research. In this chapter, the focus will be on the conclusions made on the findings of the literature and the results of the empirical research. The shortcomings will be discussed and recommendations will be formulated, including future research suggestions and concluding with a summary.

According to the first specific objective stated in chapter 1, individual characteristics, and safety behaviour (Self-esteem, Generalised Self-efficacy and Work Locus of Control) as well as the relationships between these constructs, were conceptualised from literature.

Self-esteem as an individual characteristic can be defined as how much value people place on themselves. Korman (1970) suggested through his “self-consistency theory” that work behaviour is based on the implementation of a self-concept. In essence, this theory means, all other things being equal, the more a person perceives himself to be competent, skilled, or qualified for a particular job, the higher will be his performance on this job.

Generalised self- efficacy is a stable trait, which is related to an individuals' belief in their own ability and their ability to mobilise their motivation, cognitive resources and specific actions to meet demands of specific situations. Generalised Self-efficacy increases with experiences of personal success and is determined by the level of task difficulty, an individual believes they can attain (Hobkirk, 2003).

Locus of control was defined as originating from the social learning and attribution theories. It refers to an individual's belief regarding their behaviour and the outcomes thereof. Literature reveals that, Locus of Control was conceptualised as a continuum, with internal control being at the lower end of the continuum, and external control being at the upper end of the continuum. The individual with a high internal locus of control believes that events and results thereof in their lives are the result of their own internal attributes. Individuals with an external locus of control are of the belief that outcomes in their lives are beyond their control. Individuals with an internal locus of control, experience situations within their work context, as being within their control and find they are able to handle the demands of the environment (Hobkirk, 2003).

Safety Behaviour, Geller (2001) defined behaviour as acts or actions by individuals that can be observed by others. "In other words, behaviour is what a person does or says as opposed to what he or she thinks, feels, or believes". To summarise, it means that an individual's act or actions should be done safely, for example, safety shoes and safety glasses will not be worn in an office environment but instead are needed in other work areas like workshops.

Primedia (2003) identified three types of behaviour that concern safety, specifically conscious behaviour, habitual behaviour and unintentional behaviour. Flemming and Lardner put it that, "Whilst a focus on changing unsafe behaviour into safe behaviour is appropriate, this should not deflect attention from analysing why people behave unsafely. To focus solely on changing individual behaviour without considering necessary changes to how people are organised, managed, motivated, rewarded and their physical work environment, tools and equipment can result in treating the symptoms only, without addressing the root causes of unsafe behaviour" (Flemming & Lardner, 2002).

The first objective was to conceptualise the individual characteristics and safety behaviour. This was achieved in chapter 2 and gives a clear understanding of the constructs addressed in this research study.

The second objective was to determine the relationship between Self-esteem, Self-efficacy, Work Locus of Control and safety behaviour. It was found that the results obtained confirmed the very strong positive relationships that exist between Safety Behaviour, Generalised Self-efficacy and an Internal Work Locus of Control. However, the results also indicated that Safety Behaviour at Work also proved to be negatively related to an External Work Locus of Control with medium practical significance and Self-esteem. This means that those members in the sample who believe that they can successfully complete what is expected from them and who take responsibility for the actions, compared to those who blame the work environment for outcomes and who do not value themselves very much are more likely to exhibit Safety Behaviour at work. Rothmann (2000) also confirmed positive correlations to exist between Internal Locus of Control and Generalised Self-efficacy.

The third objective was to determine the impact of Self-esteem, Self-efficacy, and Work Locus of Control on Safety Behaviour. In line with the stronger relationship that was observed in this study, only an Internal Work Locus of Control ($\beta = 0.34$; $t = 3.27$; $p \leq 0.00$) proved to be a statistically significant predictor of the dependent variable, Safety Behaviour.

5.3 LIMITATIONS OF THE RESEARCH

The following limitations were identified in this study and should be acknowledged.

- The entire population could not complete the measuring battery on one occasion and were requested to complete the questionnaires at convenient times for the respective departments. The questionnaires were confidential, hence participants were not required to identify themselves and consequently not all questionnaires were returned. The total population in this study was

201; however, only 140 questionnaires were handed out and 121 returned, of which five were erroneously completed. The sample represents a response rate of 60%.

- The research results cannot be generalised to any other business units of the petrochemical company.
- The study population was too small.
- Other individual characteristics that may also contribute to safety behaviour were not taken into consideration and therefore other measuring instruments could not be taken into account.

5.4 RECOMMENDATIONS

5.4.1 Recommendations for the organisation

The results obtained confirmed that a very strong positive relationship exists between Safety Behaviour, Generalised Self-efficacy and an Internal Work Locus of Control. These relationships also proved to be medium and large respectively, in a practical sense. However, the results also indicated that Safety Behaviour at Work also proved to be negatively related to an External Work Locus of Control with medium practical significance and Self-esteem. This means that those members in the sample who believe that they can successfully complete what is expected from them and who take responsibility for the actions compared to those who blame the work environment for outcomes and who do not value themselves very much are more likely to exhibit safety behaviour at work. This implies that while the level of Safety Behaviour is reasonable, the organisation needs to invest in developing a strong Self-esteem and reducing External Work Locus of Control in the workforce.

5.4.2 Future research

Future research need to be conducted to determine what factors can mediate the relationship between Safety Behaviour and individual characteristics to be able to introduce the most effective interventions to improve Safety Behaviour in the workplace.

New research should focus on causal relationships between Safety Behaviour, Self-esteem, Self-efficacy and Work Locus of Control. It needs to explore the underlying mechanisms of individual characteristics that would produce Safety Behaviour.

In addition, future research should also include a larger population in an empirical study.

5.5 CONCLUSION

In line with the first specific objective stated in chapter 1, Safety Behaviour, Self-esteem, Generalised Self-efficacy and Locus of Control, as well as the relationships between these constructs, were conceptualised from literature.

In summary, results of the present study indicate that Self-esteem, Work Locus of Control, and Generalised Self-efficacy are significant predictors of Safety Behaviour. However, there is much to be known about the exact nature of the traits (whether or not these are indicators of the broader core self-evaluations construct) and the processes by which they affect these outcomes. In light of the similar correlations of the traits with satisfaction and performance observed here, and the high correlations among the traits, future research considering these traits together appears warranted.

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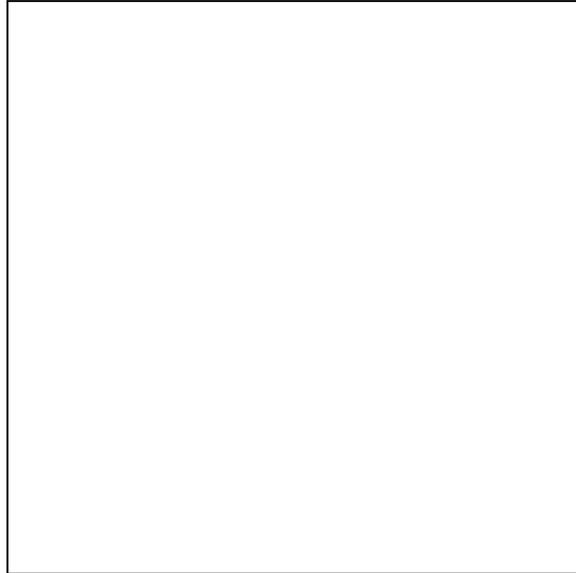
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APPENDIX A: QUESTIONNAIRE



Dear colleagues

I am a MBA final year student at the Potchefstroom Business School of the North-West University (Vaal Triangle Campus). As part of my studies, I'm required to carry out a research study.

You are requested to complete the enclosed questionnaire, and answer all questions as accurately and honestly as possible. Full details on how to complete the questionnaire are provided throughout.

Please take a few minutes to complete the questionnaire.

Thank you.

Section A

Biographical data:

Do not indicate your name, surname or employee number. The following is needed for comparative purposes and will in no way be used to attempt to establish your identity. Please mark the appropriate boxes with a clearly marked 'X'.

A1. Business			
Electrical Operations	Steam Stations	Water & Waste	Infragas
SILOG	P&SM	Lab	OES
SkillTEC	SHERQ	Finance	IM
Corporate Affairs	HR	Business Development	LDC
Legal	SPM	Other	

A2. How many years SASOL service do you have?						
Less than 2 years	2 – 4 years	5 – 9 years	10 – 14 years	15 – 19 years	20 – 24 years	25 years or more

A3. Current job level.								
Below Level 8	Level 8	Level 7	Level 6	Level 6C	Level 5B	Level 5A	Level 4	Level 3+

A4. Number of years at your current level.						
Less than 1 year	1 – 2 years	3 - 4 years	5 - 6 years	7 – 8 years	9 - 10 years	More than 10 years

A5. Gender	
Male	Female

A6. Qualification				
Up to Grade 11 (Standard 9)	Grade 12 (Standard 10)	Diploma	Degree	Post-graduate Degree

A7. Age				
24 and younger	25 – 35 years	36 – 45 years	46 – 55 years	56 years and older

A8. Home language					
English	Xhosa	Zulu	Sotho	Afrikaans	Other: _____

A9. Race				
African	Coloured	Indian	White	Other: _____

Section B

Individual factors and safety behaviour

The following statements concern attitudes and feelings you might have about yourself and your performance on a variety of tasks.

Circle the number next to the alternative that best describes you.

1 = Strongly Disagree	2 = Disagree	3 = Neutral	4 = Agree	5 = Strongly Agree
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	STATEMENT	SCALE				
	General Perceived Self-Efficacy					
B1	I can always manage to solve difficult problems if I try hard enough.	1	2	3	4	5
B2	If someone opposes me, I can find means and ways to get what I want.	1	2	3	4	5
B3	It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4	5
B4	I am confident that I could deal efficiently with unexpected events.	1	2	3	4	5
B5	Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4	5
B6	I can solve most problems if I invest the necessary effort.	1	2	3	4	5
B7	I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4	5
B8	When I am confronted with a problem, I can usually find several solutions.	1	2	3	4	5
B9	If I am in trouble, I can usually think of a solution.	1	2	3	4	5
B10	I can usually handle what comes my way.	1	2	3	4	5
	Work Locus of Control Scale					
B11	A job is what you make of it.	1	2	3	4	5
B12	On most jobs, people can pretty much accomplish whatever they set out to accomplish.	1	2	3	4	5

B13	If you know what you want out of a job, you can find a job that gives it to you.	1	2	3	4	5
B14	If employees are unhappy with decisions made by their boss, they should do something about it.	1	2	3	4	5
B15	Getting the job you want is mostly a matter of luck.	1	2	3	4	5
B16	Making money is primarily a matter of good fortune.	1	2	3	4	5
B17	Most people are capable of doing their jobs well if they make the effort.	1	2	3	4	5
B18	In order to get a really good job you need to have family members or friends in high places.	1	2	3	4	5
B19	Promotions are usually a matter of good fortune.	1	2	3	4	5
B20	When it comes to getting a really good job, who you know is more important than what you know.	1	2	3	4	5
B21	Promotions are given to employees who perform well on their job.	1	2	3	4	5
B22	To make a lot of money you have to know the right people.	1	2	3	4	5
B23	It takes a lot of luck to be an outstanding employee on most jobs.	1	2	3	4	5
B24	People who perform their jobs well generally get rewarded for it.	1	2	3	4	5
B25	Most employees have more influence on their supervisors than they think they do.	1	2	3	4	5
B26	The main difference between people who make a lot of money and people who make a little money is luck.	1	2	3	4	5
ROSENBERG SELF-ESTEEM SCALE						
B27	I feel that I am a person of worth, at least on an equal plane with others.	1	2	3	4	5
B28	I feel that I have a number of good qualities.	1	2	3	4	5
B29	All in all, I am inclined to feel that I am a failure.	1	2	3	4	5
B30	I ma able to do things as well as most people.	1	2	3	4	5

B31	I feel I do not have much to be proud of.	1	2	3	4	5
B32	I take a positive attitude toward myself.	1	2	3	4	5
B33	On the whole, I am satisfied with myself.	1	2	3	4	5
B34	I wish I could have more respect for myself.	1	2	3	4	5
B35	I certainly feel useless at times.	1	2	3	4	5
B36	At times I think that I am a no good at all.	1	2	3	4	5
	Safety behaviour					
B37	I always ensure that my equipment meet safety standards	1	2	3	4	5
B38	I always comply with safety standard when doing my work	1	2	3	4	5
B39	I always raise the importance of safe behaviour at work	1	2	3	4	5
B40	I ensure that my co-workers comply with safety standards	1	2	3	4	5
B41	Our department has a good safety record	1	2	3	4	5
B42	I was never reprimanded for unsafe behaviour	1	2	3	4	5
B43	Our department takes safety meetings very serious	1	2	3	4	5
B44	Our department hold regular safety meetings	1	2	3	4	5

THANK YOU FOR YOUR TIME