

# **WORK WELLNESS IN THE CHEMICAL INDUSTRY**

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## COMMENTS

The reader is reminded of the following:

- The references as well as the editorial style as prescribed by the Publication Manual (5<sup>th</sup> edition) of the American Psychological Association (APA) were followed in this thesis. This practice is in line with the policy of the Programme in Industrial Psychology of the North-West University to use APA style in all scientific documents as from January 1999.
- The thesis is submitted in the form of three research articles. The editorial style specified by the South African Journal of Industrial Psychology (which agrees largely with the APA style) is used, but the APA guidelines were followed in constructing tables.

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*We are not what we are, but what we make of ourselves.*

*Collin (1998)*

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## SUMMARY

**Topic:** Work wellness in the chemical industry

**Key terms:** Well-being or wellness, affect, dispositional optimism, organisational commitment, job satisfaction, life satisfaction, health, values, career anchors, burnout, engagement, and job demands and job resources

Organisations are becoming increasingly aware of issues of employee well-being. The ever increasing demands of the competitive and stressful workplace environment, personal relationships, time constraints and lack of a work-life balance are slowly but surely taking their toll on people's physical, emotional, spiritual and mental wellness. Corporate well-being is defined in terms of healthier employees who produce more and cost less, which emphasises that the chemical industry needs to give focused attention to wellness interventions. The first step in enhancing work wellness is the successful diagnosis of burnout and work engagement, as well as investigating the components that wellness consists of to ensure that the correct issues receive attention. It is important though that reliable and valid instruments be used to measure the constructs. Furthermore, little information exists regarding the wellness, burnout, engagement and job demands and job resources of employees in the chemical industry.

The general aim of this study was to assess and investigate correlations of components that will influence well-being for employees, to measure combined values using the Values Scale and Career Orientation Inventory, and to assess the effects of job demands on job resources, burnout and engagement.

A cross-sectional survey design was used with random samples ( $N = 490$ ) of employees in the chemical industry. A biographical questionnaire, Affectometer 2 (AFM), the Life Orientation Test-Revised (LOT-R), the Organisational Commitment Questionnaire (OCQ), the Minnesota Satisfaction Questionnaire (MSQ), the Satisfaction with Life Scale (SWLS), the General Health Questionnaire (GHQ), the Values Scale (VS), the Career Orientation Inventory (COI), the Job Demands-Resources Scale (JDRS), the Maslach Burnout Inventory-General Survey (MBI-GS), and the Utrecht Work Engagement Scale (UWES) were administered. Cronbach alpha coefficients, exploratory factor analysis, multivariate analysis of variance (MANOVA), one-way analysis of variance (ANOVA), and multiple regression analysis were used to

analyse the data. Structural equation modelling was used to test a structural model of work wellness.

A principal factor analysis with a varimax rotation indicated a three-factor model of well-being. The first factor was labelled general well-being expectations, consisting of satisfaction with life, positive and negative affect, optimism, pessimism, and professional efficacy. The second factor was labelled motivation, and included intrinsic and extrinsic job satisfaction, as well as affective commitment. The third factor was labelled energy, and included cynicism, exhaustion, and general health.

A rotated factor matrix indicated eight factors that can be extracted from the Values Scale and be regarded as life values (Improvement of the Self and Others, Physical Activity and Risk, Autonomy, Social Relations, Prestige, Economic Rewards and Security, Aesthetics, and Cultural Connectedness). The career anchors were also sorted into six factors as based on the rotated factor matrix, being: Challenge, Influence, Security, Service, Autonomy, and Management, and can be described as work values.

A second-order factor analysis indicated that job demands consist of overload, and job resources of organisational support, growth opportunities, job insecurity, social support, and advancement. A lack of job resources and high job demands lead to unwellness, while the presence of job resources lead to well-being.

The contributions made to Industrial Psychology as a science were discussed and recommendations for future research were made.

## OPSOMMING

**Onderwerp:** Werkwelstand in die chemiese bedryf

**Sleuteltermes:** Welsyn of welstand, affek, dispositionele optimisme, organisasieverbondenheid, werkstevredenheid, lewenstevredenheid, gesondheid, waardes, loopbaanankers, uitbranding, begeestering, en werkeise en werkhulpbronne

Organisasies word toenemend bewus van kwessies rondom werknemerwelstand. Die groter wordende eise wat gestel word deur die mededingende en stresvolle werksomgewing, persoonlike verhoudinge, tydsbeperkings en gebrekkige werklewe-balans is besig om stadig maar seker hul tol te eis op mense se fisiese, emosionele, spirituele en verstandelike welstand. Korporatiewe welstand word gedefinieer in terme van gesonder werknemers wat meer produseer en minder kos, wat weereens beklemtoon hoe belangrik dit is dat die chemiese bedryf gefokusde aandag aan welstandsintervensies moet gee. Die eerste stap ter verbetering van werkwelstand is die suksesvolle diagnose van uitbranding en werkbegeestering, gevolg deur 'n ondersoek na die komponente waaruit welstand bestaan ten einde te verseker dat die korrekte kwessies aandag geniet. Dit is baie belangrik dat betroubare en geldige instrumente gebruik word om die konstrakte te meet. Baie min inligting is beskikbaar oor die welstand, uitbranding, begeestering en werkeise en -hulpbronne van werknemers in die chemiese bedryf.

Die algemene doelstelling van hierdie studie was om korrelasies van komponente wat welstand van werknemers sal beïnvloed, te evalueer en te ondersoek, om gekombineerde waardes te meet met behulp van die Waardesskaal en die Loopbaanoriëntasievraelys, en om die effek van werkeise op werkhulpbronne, uitbranding en begeestering te bepaal.

Daar is gebruik gemaak van 'n dwarsdeursnee-opnameontwerp met ewekansige steekproewe ( $N = 490$ ) van werknemers in die chemiese bedryf. 'n Biografiese vraelys, Affectometer 2 (AFM), die Hersiene Lewensoriëntasietoets (LOT-R), die Organisasieverbondenheidsvraelys (OCQ), die Minnesota Tevredenheidsvraelys (MSQ), die Lewenstevredenheidskaal (SWLS), die Algemene Gesondheidsvraelys (GHQ), die Waardesskaal (VS), die Loopbaanoriëntasievraelys (COI), die Werkeise-Hulpbronne-skaal (JDRS), die Maslach-Uitbrandingsvraelys – Algemene Opname (MBI-GS), en die Utrecht Werkbegeesteringskaal (UWES) is afgeneem.

Cronbach-alfakoëffisiënte, verkennende faktoranalise, meerveranderlike variansieanalise (MANOVA), eenrigtingvariensieanalise (ANOVA), en meervoudige regressieanalise is gebruik om die data te ontleed. Strukturele vergelyking-modellering is gebruik om 'n strukturele model van werkwelstand te toets.

'n Hooffaktoranalise met 'n varimaks-rotasie het op 'n driefaktormodel van welstand gedui. Die eerste faktor (algemene welstandsverwagtinge) het bestaan uit lewensvrede, positiewe en negatiewe affek, optimisme, pessimisme, en professionele effektiwiteit. Die tweede faktor is geïdentifiseer as motivering, en het intrinsieke en ekstrinsieke werksbevredeiging sowel as affektiewe verbondenheid ingesluit. Die derde faktor (energie) het sinisme, uitputting en algemene gesondheid ingesluit.

'n Geroteerde faktormatriks het agt faktore geïdentifiseer wat uit die Waardesskaal onttrek kan word en as lewenswaardes beskou kan word (Verbetering van die Self en Andere, Fisiese en Risiko, Outonomie, Sosiale Verhoudinge, Prestige, Ekonomiese Belonings en Sekuriteit, Estetika, en Kulturele Verbondenheid). Die loopbaanankers is eweneens in ses faktore gesorteer soos gebaseer op die geroteerde faktormatriks, synde: Uitdaging, Invloed, Sekuriteit, Diens, Outonomie, en Bestuur, en kan as werkwaardes beskryf word.

'n Tweeorde-faktoranalise het aan die lig gebring dat werkeise bestaan uit oorlading, en werkhulpbronne uit organisasie-ondersteuning, groeigeleenthede, werksonsekerheid, sosiale ondersteuning, en vooruitgang. 'n Gebrek aan werkhulpbronne en hoë werkeise lei tot "onwelstand", terwyl die aanwesigheid van werkhulpbronne tot welstand lei.

Die bydraes wat gemaak is tot Bedryfsielkunde as 'n wetenskap is bespreek, en aanbevelings is gemaak vir verdere studie.

# **CHAPTER 1**

## **INTRODUCTION**

This thesis focuses on the well-being of employees in the chemical industry.

Chapter 1 focuses on the problem statement, research objectives and research methodology. The chapter starts out with a problem statement, giving an overview of previous related research conducted regarding well-being or wellness, and specifically affect, dispositional optimism, organisational commitment, job satisfaction, life satisfaction, health, values, career anchors, burnout and engagement, and job demands and job resources. The prior research is linked to the research project at hand and its research objectives. A discussion of the research method follows, with an explanation regarding the research design, participants, measuring instruments and statistical analysis. The chapter concludes with an overview of the chapters comprising this thesis.

### **1.1 PROBLEM STATEMENT**

The world of work is continuously changing. The environment in which employees in South Africa and elsewhere currently function demands more of them than during any previous period (Rothmann, 2003). The employment relationship has also changed, altering the type of work that people do, when they work and how much they do (Barling, 1999). Employees have to cope with the demands that arise from fulfilling various roles, often with limited resources. Tracking and addressing their effectiveness in coping with new demands and stimulating their growth in areas that could possibly impact on individual well-being and organisational efficiency and effectiveness are therefore crucial. Wellness of employees is thus an important focus area for research and intervention (Maslach, Schaufeli, & Leiter, 2001).

According to Rothmann (2003), work often generates ambivalent feelings. On the one hand, it requires effort and is associated with lack of freedom and negative feelings, but on the other hand, work creates energy by enabling development and generating positive feelings. Thus, it seems that work could lead to illness as well as health (Schaufeli & Bakker, 2001; Turner, Barling, & Zacharatos, 2002).

Lu (1999) argues that stress has become one of the most serious health issues, a problem not just affecting the individual, but also employers. Research over the past three decades has shown that the experiences of occupational stress are closely related to the health and safety of individuals which contributes to the well-being of their organisations or institutions (Rees, 1995; Rees & Redfern, 2000). According to Beehr and Newman (1978, p. 670), stress may be defined as “a situation wherein job-related factors interact with a worker to change (i.e. disrupt or enhance) his/her psychological and/or physiological condition, such that the person is forced to deviate from normal functioning”.

Studies have shown that occupational stressors can result in mental, physical and behavioural stress reactions, such as burnout, depression and psychosomatic diseases (Blassingame, 2003; Corville & Bernardi, 1999; Dunn, 2000; Houkes, Janssen, De Jonge, & Nijhuis, 2001). According to the findings of Mills and Huebner (1998), there is significant evidence that occupational stress could influence the experience of burnout considerably. The link between unmanaged stress and the negative impact on health and well-being is well-demonstrated in stress research and is linked to severe physical consequences, some of which can be fatal (Blassingame, 2003; Corville & Bernardi, 1999; Dunn, 2000; Winefield, Gillespie, Stough, Dua, & Hapuararchchi, 2002).

Research shows that back pain, stress and fatigue are ranked as the most frequently experienced occupational health problems (Paoli & Merllié, 2001). Work-related mental problems constitute a significant social problem in many countries. In the Netherlands, after ‘common colds, flu and minor respiratory symptoms’, ‘mental problems’ are the second most frequent cause of sickness absenteeism, whereas stress-related disorders are the most frequent diagnosis for being unfit for work (Blassingame, 2003; Corville & Bernardi, 1999; Dunn, 2000; Houtman, Smulders, & Klein Hesselink, 2002). It seems that, rather than being an exception, the situation in the Netherlands is typical of most developed Western countries (Landsbergis, 2003).

Research in psychology often investigated “what can go wrong” versus “what can go right” (Strümpfer, 1995). In industrial and organisational psychology, there is a tendency to focus mainly on negative implications in research and practice. Burnout, stress, violations of psychological contracts, job insecurity and downsizing remain the most popular topics for study, according to Turner et al. (2002). However, Schaufeli and Bakker (2001) emphasise

positive concepts such as job satisfaction, organisational commitment, organisational citizenship behaviour and intrinsic motivation. The “repair shop” perspective used by Keyes and Haidt (2003) tends to focus on identification of financial costs to the organisation of distressed, dissatisfied and unhappy employees. The cause of this employee dissatisfaction and unhappiness is deeply imbedded in the emotional maladjustment of the employee (Wright, 2003).

This development indicates an emerging trend towards a ‘positive psychology’ that focuses on human strengths and optimal functioning rather than on weaknesses and malfunctioning (Seligman & Csikszentmihalyi, 2000). This new paradigm, the so-called “positive psychology”, focuses on the presence of wellness, rather than on the absence of illness. The aim of positive psychology is to study the strengths and virtues of human beings. Thus, treatment is not just about fixing what is broken, but also identifying and nurturing what is best (Seligman & Csikszentmihalyi, 2000). Also, Antonovsky (1979) introduced the concept of *salutogenesis* (Latin *salus* = health, Greek *genesis* = *origin*), proposing that the origins of health rather than those of disease should be studied. Strümpfer (1995) argued that the concept of *salutogenesis* should be broadened from a focus on health only, to *fortigenesis* (Latin *fortis* = strong), referring to strength. Wissing and Van Eeden (2002) suggested a new sub-discipline of psychofortology and suggested that not only the origins of psychological well-being should be studied, but also the nature, manifestations and ways to enhance psychological well-being.

From a pathogenic as well as a fortigenic perspective, burnout and work engagement are specific focus areas for research and intervention (Maslach et al., 2001). Although Maslach and Jackson (1986, p. 1) defined burnout as “... a syndrome of emotional exhaustion, depersonalisation, and reduced personal accomplishment that can occur among individuals who do ‘people work’ of some kind”, researchers currently acknowledge that employees in almost any job can develop burnout (Schaufeli & Enzmann, 1998). Schaufeli and Enzmann (1998, p. 36) also identified exhaustion as a core indicator of burnout and a sense of reduced effectiveness as an accompanying symptom, but added three additional general symptoms, namely distress (affective, cognitive, physical and behavioural), decreased motivation, and dysfunctional attitudes and behaviours at work. Burnout could be defined as “a persistent, negative, work-related state of mind in ‘normal’ individuals that is primarily characterised by exhaustion, which is accompanied by distress, a sense of reduced effectiveness, decreased

motivation, and the development of dysfunctional attitudes and behaviours at work” (Schaufeli & Enzmann, 1998, p. 36).

Maslach (1982, 1993), Maslach, Jackson, and Leiter (1996) and Maslach et al. (2001) described burnout as a syndrome consisting of three dimensions, namely feelings of emotional exhaustion, cynicism and reduced personal accomplishment. *Emotional exhaustion*, the individual stress dimension of burnout, refers to feelings of depleted physical and emotional resources and prompts actions in the worker to distance himself/herself emotionally and cognitively from his/her work, presumably as a way to cope with work overload. The interpersonal context dimension is represented by cynicism, which entails negative, callous and cynical attitudes or excessively detached responses towards the recipients of service, reducing the recipient to an impersonal object. As a result, Demerouti, Bakker, Nachreiner, and Schaufeli (2001) considered these two dimensions as the core symptoms of burnout. The third dimension, *lack of personal accomplishment*, represents the self-evaluation dimension of burnout and refers to feelings of insufficiency, incompetence, lack of achievement, as well as feelings of unproductiveness (Maslach et al., 2001).

Schaufeli and Enzmann (1998) agree partially with the description by Maslach (1982, 1993) and Maslach et al. (1996, 2001) by also identifying exhaustion as a core indicator of burnout and a sense of reduced effectiveness as an accompanying symptom, but name three more accompanying general symptoms. The other three symptoms are: *distress* (affective, cognitive, physical and behavioural), *decreased motivation*, and *dysfunctional attitudes and behaviours at work*. As a result, the definition of burnout as presented by Schaufeli and Enzmann (1998), as mentioned earlier may represent a summary of the above.

Research elsewhere in the world has found that the possible causes of burnout can be classified into organisational, biographical and personality factors. Organisational factors that contribute to burnout are work overload (Bacharach, Bamberger, & Conley, 1991; Corville & Bernardi, 1999; Landsbergis, 2003), poor collegial support (Golembiewski & Munzenrider, 1988), role conflict and role ambiguity (Miller, Ellis, Zook, & Lyles, 1990) and lack of feedback (participation in decision making and autonomy). These factors represent demands on employees (also referred to as job stressors) which are included in most models of burnout (Schaufeli & Enzmann, 1998). One of the most substantial organisational factors seems to be occupational stress, which is normally caused by job stressors.

Research over the past two decades has shown that burnout is not only related to negative outcomes for the individual – including depression, a sense of failure, fatigue, and loss of motivation – but also to negative outcomes for the organisation – including absenteeism, turnover rates and lowered productivity (Blassingame, 2003; Corville & Bernardi, 1999; Dunn, 2000). According to Levert, Lucas, and Ortlepp (2000), burnt-out workers show a lack of commitment and are less capable of providing adequate services, especially along dimensions of making commitments and initiating involvement with clients (Fryer, Poland, Bross, & Krugman, 1988; Maslach, 1982). Burnt-out workers are also too depleted to give of themselves in a creative, co-operative fashion (Sammut, 1997). Byrne (1992) views burnout as the final step in the process of unsuccessful attempts to cope with negative stress conditions and reasons that burnout is a consequence of prolonged and extensive job-related stress. Rothmann, Malan, and Rothmann (2001) regard burnout as a particular kind of prolonged job stress; in other words, a particular, multidimensional, chronic stress reaction that goes beyond mere exhaustion.

Two trends recently emerged in burnout research, which boil down to a broadening of the traditional concept and scope (Maslach et al., 2001). First, the concept of burnout, which was initially closely linked to the human services such as health care, education and social work where people do ‘people’ work of some kind, has been expanded towards all other professions and occupational groups as mentioned before (Maslach & Leiter, 1997). Secondly, burnout research seems to shift towards its opposite, namely *work engagement*. Researchers recently started to extend their view and interest to the positive pole of employees’ well-being, instead of focusing exclusively on the negative pole. From this perspective, burnout is rephrased as erosion of engagement with the job (Schaufeli, Salanova, González-Romá, & Bakker, 2002).

According to Maslach and Leiter (1997), work engagement is characterised by energy, involvement and efficacy, which are the direct opposites of the burnout dimensions exhaustion, cynicism and lack of professional efficacy, respectively. Engaged individuals have a sense of energetic and effective connection with their work activities and they see themselves as able to deal completely with the demands of their job.

According to Schaufeli et al. (2002, p. 74), work engagement is defined as the opposite of burnout, as “a positive, fulfilling, work-related state of mind that is characterised by vigour,

dedication and absorption.” *Vigour* refers to high levels of energy and mental resilience while working, as well as a willingness to exert effort and to persist even through difficult times. *Dedication* is described as a sense of significance, enthusiasm, inspiration, pride and challenge. *Absorption* refers to a tendency to be fully concentrated and deeply engrossed in work, as a result at which time passes quickly and one has difficulty to detach oneself from one’s work. It also includes focused attention, clear minds, mind and body unison, effortless concentration, complete control, loss of self-consciousness, distortion of time, and intrinsic enjoyment (Csikszentmihalyi, 1990).

Contrary to the case of burnout, the concept of work engagement does not have a long research history. The concept was developed from a perspective of positive psychology. In the past, psychological health research focused almost exclusively on psychological dysfunction, ill-health and unwell-being, thereby neglecting the psychological health and well-being of individuals (Seligman & Csikszentmihalyi, 2000). Even today, the use of basic terms is negatively biased and the focus is on the *absence of illness* rather than on the *presence of wellness*.

The literature is quite clear about the negative effects of high job demands and low resources on well-being with specific reference to incidences of stress, burnout and ill-health (Kinman & Jones, 2003).

The effects of job demands and job resources as developed by Jackson and Rothmann (2005) are illustrated in Figure 1. Figure 1 shows that jobs characterised by high demands and low resources are stressful. Furthermore, jobs characterised by both high demands and resources are categorised as challenging. Demerouti et al. (2001) confirm that job demands are associated with exhaustion, whereas lacking job resources are associated with disengagement (cynicism).

		Low	<b>Job demands</b>	High
<b>Job resources</b>	High	Easy job	Challenging job	
	Low	Boring job	Stressful job	

Figure 1: The effects of job demands and job resources

In order to explain the causal pattern or relationship between occupational stresses and the outcomes thereof, several theoretical models have been developed. The *Person-Environment Fit Model* proposed by French, Caplan, and Harrison (1982) view stress as arising from a misfit between the requirements of the job (e.g. demands, resources) and the values, skills and traits of the individual (Cooper, Dewe, & O’Driscoll, 2001; Winefield et al., 2002). Implicit in the notion of the misfit is the person’s ability to handle or cope with the encounter, while aspects such as values, resources, demands and available skills will help to determine the perceived misfit. Subjectivity of the person (how the individual perceives the encounter) will furthermore increase the likelihood that strain will occur. The *Job Demands-Control Model* of Karasek (1979) is based on the proposition that the interaction between job demands and job control (decision latitude) is the key in explaining strain-related outcomes (Cooper et al., 2001). In other words, jobs that combine high levels of demand with low levels of autonomy, control or decision latitude are most stressful (Winefield et al., 2002). According to the *Conservation of Resources theory* (COR) (Hobfoll, 1989), people strive to retain, protect and build resources, and any threats towards the person are the potential or actual loss of their valued resources. Negative outcomes (i.e. stress, burnout and low work engagement) are likely to occur when there is (a) a threat of a net loss of resources, (b) a net loss of resources, or (c) a lack of resource gain following the investment of resources (Hobfoll, 1989; Taris, Schreurs, & Van Iersel-Van Silfhout, 2001).

Cooper et al. (2001) state that stress should be seen as a transaction. To them, the term *transaction* implies that stress is neither in the person nor in the environment, but in the relationship between the two (Cooper et al., 2001). Therefore, Siu (2002) argues that a

stressful transaction occurs when a person both exerts an impact on and responds to his/her environment. Following a transactional perspective, stress arises when the demands of a particular encounter are appraised by the individual as about to exceed the resources available, thereby threatening the well-being (Lazarus, 1991) and bringing about change in the person's psychological and/or physiological condition in order to cope with the encounter (Cooper et al., 2001; Sadri & Marcoulides, 1997; Siu, 2002). Stress is thus an ongoing process that involves the individual transacting with his/her environment, while assessing the encounters and trying to cope with the issues that arise.

Mullins (1999) argues that stress is individually defined; one person's stress can be another's excitement or energiser. Although stress may activate people (for some it may be immobilising) with possible positive behavioural consequences, the physiological impact upon the person should not be forgotten. In other words, people bring along individual differences in terms of their personality and life experience (i.e. coping strategies) that will shape their responses to stress (Rees, 1995). It depends on the person's attitude when appraising the situation that determines whether the situation is a stressor or not (Siu, 2002). For instance, if a person thinks or feels that he/she is unable to cope with a large workload, then workload becomes a stressor or something that causes a person to feel stressed. For this reason, Cooper et al. (2001) argue that the transactional perspective emphasises three important aspects or themes: 1) a dynamic cognitive state, 2) a disruption or enhancement in normal functioning, and 3) the resolution of that disruption or imbalance. These themes also underlie the framework for modelling stress as well as the essence of the stress experience (Cooper et al., 2001).

There is significant evidence to suggest that chronic and high levels of occupational stress, left unchecked, are related to mental and physical well-being, job dissatisfaction, absenteeism, stress related injuries, turnover and intention to quit (Breck, 2000; Corville & Bernardi, 1999; Dunn, 2000; Siu, 2002; Winefield et al., 2002). Findings (Breck, 2000; Corville & Bernardi, 1999; Dunn, 2000; Winefield et al., 2002) have shown significant correlations between higher levels of psychological strain and incidences of self-reported stress-related health symptoms, such as sleeping difficulties, headaches, and viral and cold infections. Furthermore, these symptoms significantly associate with stress-related medical conditions reported by staff members, such as migraines, hypertension and coronary heart disease.

Siu (2002) argues that it is of utmost importance to identify potential occupational stressors as well as variables which have beneficial consequences for both employees and their organisations. Stressors can be seen as the antecedents (stimuli) of the transaction which normally leads to individual strain (Breck, 2000). Cooper, Sloan, and Williams (Siu, 2002) categorise six sources of stress or occupational stressors, being: factors intrinsic to the job, management role, relationships with others, career and achievement, organisational structure and climate and home/work interference. Furthermore, Cooper et al. (2001) state that stressors could be grouped into three major categories, namely: *job-specific sources*, *organisational sources* and *individual or personal sources*.

The multi-dimensional nature of well-being (Watson & Tellegen, 1985) can be measured in relation to the work domain (Warr, 1990) by capturing subtleties, complexities and changes in the experience of work (Briner, 1997). Affective well-being reflects the frequent experience of positive affects and the infrequent experience of negative affects (Diener & Larson, 1993). This is supported by Warr's measures of well-being as modified by Daniels, Brough, Guppy, Peters-Bean, and Weatherstone (1997).

According to Schimmack (2003), research indicates that while it is likely that positive feelings will be low when negative feelings are high, there is also growing evidence that positive affect and negative affect tend to function relatively independently (Clark & Watson, 1991; Diener & Emmons, 1984). Work-related affective well-being has often been operationalised as job satisfaction, and job satisfaction represents a positive affective orientation towards the job, or to intrinsic and extrinsic facts of the job (Clegg & Wall, 1981; Evans, 1969). Scheier and Carver (1985) regard optimism as a coping mechanism in stressful situations; therefore, this component requires separate attention. Optimists seem to use more problem-focused coping strategies than pessimists. When problem-focused coping is not a possibility, optimists turn to strategies such as acceptance and positive reframing (Harju & Bolen, 1998). Lack of commitment might have a negative effect on the company and thus needs to be taken into consideration when evaluating well-being (Mathieu & Zajac, 1990). Maslach et al. (2001) indicate that burnout might be a response to work overload and thus results in different behavioural characteristics, possibly also in absenteeism. According to Diener, Suh, Lucas, and Smith (1999), satisfaction with life is a subjective evaluation by every individual. Satisfaction with life can influence affective well-being, which validates why the component needs to be investigated.

Rice (1984) found that overall life satisfaction is defined as the degree to which the experience of an individual's life satisfies that individual's wants and needs, both physically and psychologically. The typical indices of health focus on disease, illness and negative concepts (Bowling, 1991), and not on well-being (Ryff & Singer, 1998). The efforts to move beyond medical and disease models of health provide important steps in the direction of construing health as states of well-being rather than ill-being (Ryff & Singer, 1998).

Events, which include the work environment and stimuli, are constantly measured against the value system of the individual, which is a determinant of the individual's motivation and behaviour (Du Toit, 1994). Research shows that values are crucial for the individual's functioning (Ball-Rokeach, Rokeach, & Grube, 1984; Feather, 1975; Scheibe, 1970). Senge (1990) is of the opinion that value actualisation over the long term might result in economic success.

The term value should be clearly defined, as it is crucial to distinguish between values, behaviour and interests. Behaviour is a feeling toward social objects, while interests are a preference for specific activities and values which mainly focus on preferences for a lifestyle and ideals the individual might have. According to England (1967), values are the meaning attached by individuals to a specific set of concepts. The connection between values and career interests is described as work values have meaning only through studying vocational interests (Crites, 1961). Values are the starting point in a career decision making process designed to expand individual freedom and active participation – what he is looking for. This involves an assessment of individual ability as well as probability (Katz, 1982). He explains that career satisfaction is the result of values that are realised. Katz (1982) states that values represent feelings (and judgement) about outcomes or results, such as the importance, purpose or worth of an activity. Interests apply to the differentiated means by which the valued goal may be reached. Langley (1992) defines values as that something that gives meaning to an individual's life.

In an interview with Mr. D.H. du Toit (23 April 2004), it was determined that career anchors also play an important role when determining wellness of the individual. A person's career anchor refers to his or her self-concept, consisting of self-perceived talents and abilities, basic values and the developed sense of motives and needs applicable to the individual's career. Once the self-concept is formed, it serves as a stabilising force – an anchor – which can be

regarded as values that a person would not give up even if he or she were forced to choose (Schein, 1996).

Career anchors are decisive when a career decision has to be made (Greenhaus, 1987). Employees' career anchors would play a role in their decision-making about what they want from their jobs and the organisation that employs them. Furthermore, the above-mentioned career anchors are related to personality characteristics of employees.

Based on the above-mentioned problem statement, the following research questions arise:

- What components would influence and enhance the experience of affective well-being and the health of employees in a chemical industry?
- Do the components that influence and enhance the experience of affective well-being and the health of employees working in a chemical industry correlate with each other?
- Is it possible to test the psychometric properties as measured by the Values Scale and Career Orientation Inventory?
- Is it possible to combine the factors as measured by the Values Scale and Career Orientation Inventory in predicting values and well-being for employees in the chemical industry taking demographic variables into consideration?
- Do job demands and/or job resources have an impact on burnout or engagement of employees in the chemical industry?

This research will make the following contributions to Industrial Psychology as a science:

- It will result in measuring specific correlating components of well-being in the chemical industry which has been proven to be reliable and valid.
- Similar values, as measured by the respective instruments, will exist, and would then be used in relation to each other; these new related values could be used to predict well-being for employees in the chemical industry, taking demographic variables into consideration.
- It will add to the existing knowledge about the role of job demands and resources in the well-being of employees.

## **1.2 RESEARCH OBJECTIVES**

The research objectives are divided into a general objective and specific objectives.

### **1.2.1 General objective**

The general objective of this research is to investigate the components of well-being, to assess the relationship between values and career anchors, and to assess the effects of job demands and resources on work-related well-being.

### **1.2.2 Specific objectives**

- To investigate which components would influence and enhance the experience of affective well-being and health of employees in a chemical industry.
- To assess and investigate correlations of the components that would influence affective well-being and health of employees in the chemical industry.
- To assess the psychometric properties of the Values Scale and Career Orientation Inventory.
- To combine the factors as measured by the Values Scale and Career Orientation Inventory in predicting values and well-being for employees in the chemical industry taking demographic variables into consideration.
- To assess the effects of job demands on job resources, burnout and engagement when investigating well-being of employees in the chemical industry.

## **1.3 RESEARCH METHOD**

The research method consists of a literature review and empirical study.

### **1.3.1 Literature review**

The literature review focuses on previous research on well-being, affect, dispositional optimism, organisational commitment, job satisfaction, life satisfaction, health, values, career anchors, burnout and engagement, and job demands and job resources. An overview is given

of the conceptualisation of these constructs in literature and on the findings in terms of measuring the above-mentioned concepts.

### **1.3.2 Empirical study**

The empirical study entails that the specifically stated objective can be achieved as follows.

#### **1.3.2.1 Research design**

A survey design is used to reach the research objectives. The specific design is the cross-sectional design, where a sample is drawn from a population at a particular point in time (Shaughnessy & Zechmeister, 1997). The information collected is used to describe the population at that time. This design can also be used to assess interrelationships among variables within a population. According to Shaughnessy and Zechmeister (1997), this design is ideally suited to the descriptive and predictive functions associated with correctional research.

#### **1.3.2.2 Participants**

A random, but stratified sample of employees working in the chemical industry in South Africa was selected. The aim of the sample was to involve as many employees as possible on various job levels in the company from skilled level upwards to senior management. A total of 501 completed questionnaires were returned. Only 490 of the questionnaires were used for the analysis of the data in two of the research articles, with 11 not useable because of missing data. This represented a return rate of 100%, but a participation rate of 97,8%. The sample consisted mainly of men (66,9%), speaking either Afrikaans or English (72,5%). The average age and qualification for the respondents were, respectively, between 40 and 49 years of age and grade twelve or less as qualification. In the third research article a total of 200 questionnaires were distributed. The data analysis used 187 of the questionnaires, with 13 not useable on account of missing data. This represented a participation rate of 93,5%. The sample consisted mainly of men (72%), speaking either Afrikaans or English (73,5%). The average age and qualification for the respondents were, respectively, between 40 and 49 years of age and grade twelve or less as qualification.

The participants all come from a fast growing chemical industry. The company's ventures into the international market makes them a major economic contributor in South Africa; employing over 40 000 people nationally, as well as internationally.

### **1.3.2.3 Measuring instruments**

Twelve questionnaires were used in the empirical study, namely a biographical questionnaire, Affectometer 2 (AFM), the Life Orientation Test-Revised (LOT-R), the Organisational Commitment Questionnaire (OCQ), the Minnesota Satisfaction Questionnaire (MSQ), Satisfaction with Life Scale (SWLS), the General Health Questionnaire (GHQ), the Values Scale (VS), the Career Orientation Inventory (COI), the Job Demands-Resources Scale (JDRS), the Maslach Burnout Inventory-General Survey (MBI-GS), and the Utrecht Work Engagement Scale (UWES).

The biographical questionnaire was developed to gather information about the demographic characteristics of the respondents. It included the following: age, qualifications, gender, marital status, satisfaction with relationships, home language, number of children, years of company specific service, current job title and job level, number of years on specific job level, determining if the employment contract is permanent, temporary or fixed term, number of promotions received in the past five years, geographical area, basic salary, and gender and ages of siblings.

*The Affectometer 2* (AFM) (Kammann & Flett, 1983) is used to measure the general well-being or sense of well-being in recent experience. The AFM (shortened version) is a 20-item scale that gives a bottom-line indication of quality of life as experienced on an affective and emotional level. The overall level of well-being or happiness is conceptualised as the extent to which positive feelings dominate over negative feelings. The subscales of the AFM measures positive affect and negative affect as supported by Du Toit (2005). Respondents evaluate themselves on a 5-point frequency scale ranging from 1 (*not at all*) to 5 (*all the time*). A simple component analysis was conducted on two dimensions of affect (i.e. negative affect and positive affect). Kamman and Flett (1983) reported alpha coefficients of 0,88 to 0,93 as well as indications of validity. In South African studies, Wissing and Van Eeden (1994) reported alpha coefficients for positive affect between 0,91 and 0,86. They further reported alpha coefficients between 0,83 and 0,90 for negative affect.

*The Life Orientation Test-Revised (LOT-R)* (Scheier, Carver, & Bridges, 1994), a 10-item measure, is used to measure dispositional optimism. Six items contribute to the optimism score and four items are fillers. The original Life Orientation Test, which hypothesised a two-factor structure of optimism (i.e. optimism and pessimism), was questioned (Harju & Bolen, 1998). Follow-up analysis demonstrated a one-factor structure, indicating that the LOT-R measures a continuum of high, average and low optimism/pessimism (Scheier et al., 1994). The LOT-R measures on a five-point Likert scale ranging from 5 (*I strongly agree*) to 1 (*I strongly disagree*). The LOT-R was found to have adequate internal consistency ( $\alpha = 0,78$ ) and excellent convergent and discriminant validity (Scheier et al., 1994). Based on a sample of 204 college students, Harju and Bolen (1998) obtained a Cronbach alpha coefficient of 0,75.

*The Organisational Commitment Questionnaire (OCQ)* (Meyer, Allen, & Smith, 1993) was used to measure the affective organisational commitment of the participants. This measure consists of 18 items and measures on a five-point scale ranging from 5 (*I strongly agree*) to 1 (*I strongly disagree*). Inter-correlations between populations were found to be consistent above 0,90 (Allen & Meyer, 1990). The internal consistency for this subscale of the questionnaire has been confirmed at the 0,80 level (Suliman & Iles, 2000). The three components of the OCQ are affective, continuance and normative commitment, and can be defined as follows: affective commitment refers to employees' emotional attachment to, identification with, and involvement in the organisation; continuance commitment is based on the costs that employees associate with leaving the organisation; normative commitment refers to employees' feelings of obligation to remain with the organisation (Allen & Meyer, 1990; Meyer, Allen, & Smith, 1993).

*The Minnesota Satisfaction Questionnaire (MSQ)* (Weiss, Davis, England, & Lofquist, 1967) indicates how satisfied or dissatisfied respondents are with their jobs by asking respondents to rate themselves on 20 questions by using a five-point Likert scale ranging from 1 (*very dissatisfied*) to 5 (*very satisfied*). The revised MSQ form measures intrinsic job satisfaction and extrinsic job satisfaction. Hirschfeld (2000) found that a two-factor model (intrinsic and extrinsic job satisfaction) was superior to a one-factor model (total job satisfaction). Alpha coefficients were found to be ranging from 0,87 to 0,95, which supports the internal consistency of the scale (Hirschfeld, 2000; Lam, Baum, & Pine, 1998).

The *Satisfaction with Life Scale* (SWLS) is defined as a global evaluation by a person of his/her life and will be used to measure satisfaction with life (Diener, Emmons, Larson, & Griffin, 1985). The SWLS is a five-item instrument which was developed by Diener et al. (1985) to measure global cognitive judgments of one's life. According to Diener et al. (1985), the SWLS was designed around the idea that one should ask respondents about the overall judgment of their lives in order to measure the concept of life satisfaction. Participants are asked to indicate their degree of agreement or disagreement on a seven-point Likert scale ranging from 1 (*I strongly disagree*) to 7 (*I strongly agree*). Scores on the SWLS range from 5 to 35, with higher scores indicating greater life satisfaction. Diener et al. (1985) reported a two-month test-retest correlation coefficient of 0,82 and a Cronbach alpha coefficient of 0,87. The inter-item correlation matrix was factor analysed, using principal axis factor analysis. According to the eigenvalues, a single factor emerged, accounting for 66% of the variance (Diener et al., 1985).

The *Health Questionnaire (GHQ)* (Cartwright & Cooper, 2002) utilising health subscales of ASSET (which refers to an Organisational Stress Screening Evaluation Tool) was developed by Cartwright and Cooper (2002) to assess respondents' level of health. Health is measured on a five-point Likert scale ranging from 1 (*never*) to 5 (*always*). The health subscales consist of 18 items arranged on two subscales: physical health and psychological well-being. All items on the physical health subscale relate to physical symptoms of stress. The items listed on the psychological well-being subscale are symptoms of stress-induced mental ill health. This subscale provides an insight into physical health, not an in-depth clinical diagnosis. Johnson and Cooper (2003) found that the psychological well-being subscale has good convergent validity with an existing measure of psychiatric disorders, namely the General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988). A simple principal component analysis was carried out on the 18 items of the General Health Questionnaire, which resulted in a one-factor solution, explaining 42,53% of the variance.

The *Values Scale (VS)*, a 110-item instrument measuring 22 different values, 5 items for each value, was designed by Super and Nevill (1985) in cooperation with The Work Importance Study, which is formed by a consortium of psychologists over 13 continents (Nevill & Kruse, 1996). The Values Scale measures the needs that an individual has regarding the hopes to live out his life roles. Secondly, the importance of a work role contributes to work satisfaction (Super & Sverko, 1990). The 22 values measured by the Values Scale are ability utilisation,

achievement, advancement, aesthetics, altruism, authority, autonomy, creativity, cultural identity, economic rewards, economic security, own lifestyle, personal development, physical activities, physical strength, prestige, risk, social interaction, social relation, spirituality, variety, and pleasant working conditions. This four-point Likert scale ranges from 1 (*little or no importance*) to 4 (*very important*). Consistencies range between 0,68 and 0,80 (Super & Sverko, 1990). Two measures of reliability were computed: firstly for internal consistency for high school, university, and other adult samples; secondly, for stability for university students. The alpha coefficients were generally above 0,65 for three samples and the test-retest values were around 0,86 (Nevill & Super, 1989).

The *Career Orientation Inventory (COI)* (Schein, 1985) consists of 41 items that measure career orientation using a six-point Likert scale. Respondents evaluate themselves on the six-point scale ranging from 1 (*not important at all*) to 6 (*of the utmost importance*). Nine career orientations are measured by the COI, being geographical security, job security, autonomy and independence, entrepreneurship, technical/functional competence, managerial competence, service dedication, pure challenge, and lifestyle integration (Boshoff, Bennett, & Kellerman, 1994). Kaplan (1990) as well as Kaplan, Boshoff, and Kellerman (1991) found Cronbach alpha coefficients of 0,70 and higher for the COI, except for Challenge, which showed an alpha coefficient of 0,45. The test-retest reliabilities of the COI vary from 0,71 to 0,91 (DeLong, 1982). With regard to construct validity, it was found that about 90% of the items of the COI loaded on the correct constructs (Kaplan, 1990). Slabbert (1987) confirmed the construct validity of the COI for South African managers.

The *Job Demands-Resources Scale (JDERS)* (Jackson & Rothmann, 2005; Rothmann & Jordaan, 2006) was developed to measure job demands and job resources. The scale was developed on a literature review. Items were developed and checked for face validity. The JDERS consists of 48 items. The questions are rated on a four-point Likert scale ranging from 1 (*never*) to 4 (*always*). Items related to typical demands and resources were generated, namely role overload (pace and amount of work, mental load and emotional load), job characteristics (variety, opportunities to learn, and independence), social support (relationship with colleagues and contact possibilities), organisational support (relationship with immediate supervisor, ambiguities about work, information, communication, and participation), uncertainty about the future, remuneration, and career possibilities.

A Wellness Questionnaire is used to measure burnout and engagement by combining the *Maslach Burnout Inventory-General Survey* (MBI-GS) (Schaufeli, Leiter, Maslach, & Jackson, 1996) and the *Utrecht Work Engagement Scale* (UWES) (Schaufeli et al., 2002). The MBI-GS consists of 16 items measuring burnout, which are divided into three subscales: Exhaustion, Cynicism, and Professional Efficacy. All items are scored on a seven-point Likert scale ranging from 0 (*never*) to 6 (*every day*). The internal consistencies (Cronbach alpha coefficients) reported by Schaufeli et al. (1996) varied from 0,87 to 0,89 for Exhaustion; 0,73 to 0,84 for Cynicism; and 0,76 to 0,84 for Professional Efficacy. Test-retest reliabilities after one year were 0,65 for Exhaustion; 0,60 for Cynicism; and 0,67 for Professional Efficacy (Schaufeli et al., 1996). Storm and Rothmann (2003) confirmed the three-factor structure of the MBI-GS in a sample of 2 396 SAPS members, but recommended that item 13 be excluded from the questionnaire. The following Cronbach alpha coefficients for the MBI-GS in South Africa were obtained: 0,88 for Exhaustion; 0,79 for Cynicism; and 0,78 for Professional Efficacy (Storm & Rothmann, 2003). The *Utrecht Work Engagement Scale* (UWES) (Schaufeli et al., 2002) will be used to measure the levels of engagement of the participants. The UWES includes three dimensions, namely Vigour, Dedication and Absorption, which is conceptually seen as the opposite of burnout and is scored on a seven-point frequency rating scale, varying from 0 (*never*) to 6 (*every day*). The questionnaire consists of 17 questions and includes questions like "I am bursting with energy every day in my work"; "Time flies when I am at work" and "My job inspires me". The alpha coefficients for the three subscales varied between 0,68 and 0,91. The alpha coefficient could be improved (it varies between 0,78 and 0,89 for the three sub-scales) by eliminating a few items without substantially decreasing the scales internal consistency. Storm (2002) obtained the following alpha coefficients for the UWES in a sample of 2396 members of the South African Police Service: Vigour: 0,78; Dedication: 0,89; Absorption: 0,78. Naude and Rothmann (2004) obtained the following alpha coefficients in a sample of emergency workers in South Africa: Vigour and Dedication: 0,87, but for the Absorption subscale only 0,61.

#### **1.3.2.4 Statistical analysis**

The statistical analysis is carried out with the aid of the SPSS Program (SPSS Inc., 2003) and the Amos Program (Arbuckle, 1999). The SPSS Program is used to carry out statistical analysis (including ANOVAs and MANOVAs) to determine the differences for values and

the demographic characteristics as well as the differences for career anchors and the demographic characteristics. The SPSS Program is also used to carry out statistical analysis regarding reliability and validity of the measuring instruments, descriptive statistics, analysis of variance, correlation coefficients, and multiple regression analysis. The Amos Program is used to carry out structural equation modelling, and tests a structural model of work wellness.

Cronbach alpha coefficients and factor analyses were computed to assess the reliability of the constructs that were measured in this study (Clark & Watson, 1995). Descriptive statistics were also used to analyse the data. Prior to principal factor extraction, principal component extraction was done to estimate the number of factors, the presence of outliers and the factorability of the correlation matrices. Exploratory factor analyses and Cronbach alpha coefficients were then computed to assess the validity and reliability of the constructs that were measured in this study. Cronbach alpha coefficients were used to determine the internal consistency of the measuring instruments (Clark & Watson, 1995). Exploratory factor analyses were carried out to investigate the construct validity of the measuring instruments and to prepare a test of a theoretical model in a path analysis, following a two-step procedure. Firstly, a simple principal components analysis was conducted on the constructs that form part of the measurement model, including affect, dispositional optimism, organisational commitment, job satisfaction, burnout, life satisfaction, and health. The eigenvalues and scree plot were studied to determine the number of factors. Secondly, a principal factor analysis with a direct oblimin rotation was conducted to determine if factors were related, and a principal factor analysis with a varimax rotation was used if the obtained factors were not related (Tabachnick & Fidell, 2001).

Pearson product-moment correlation coefficients were used to specify the relationship between the different variables. A cut-off point of  $p = 0,05$  was set for the statistical significance of the results. Effect sizes (Cohen, 1988; Steyn, 1999) were used in addition to statistical significance to determine the practical significance of relationships. Effect sizes indicate whether obtained results are important, while statistical significance may often show results which are of little practical relevance (Steyn, 1999). A cut-off point of 0,30 (medium effect, Cohen, 1988) was set for the practical significance of correlation coefficients.

Multivariate analysis of variance (MANOVA) was used to determine the significance of the difference between the different components and various biographical characteristics of the sample. MANOVA tests whether mean differences among groups on a combination of dependent variables are likely to have occurred by chance (Tabachnick & Fidell, 2001). In MANOVA, a new dependent variable that maximises group differences is created from the set of dependent variables. One-way analysis is then performed on the newly created dependent variable. When an effect was significant in MANOVA, one-way analysis of variance (ANOVA) was used to discover which dependent variables were affected. Because multiple ANOVAs were used, a Bonferroni-type adjustment was made for inflated Type 1 error. Wilks' lambda was used to test the significance of the effects. Wilks' lambda is a likelihood ratio statistic that tests the likelihood of data under the assumption of equal population mean vectors for all groups against the likelihood under the assumption that the population mean vectors are identical to those of the sample mean vectors for different groups.

#### **1.4 DIVISION OF CHAPTERS**

The chapters are presented as follows in this thesis:

Chapter 1	Introduction
Chapter 2	A model of well-being of employees in the chemical industry
Chapter 3	Career anchors and values of employees in the chemical industry
Chapter 4	Job demands, job resources and wellness of employees in the chemical industry
Chapter 5	Conclusions, limitations and recommendations

#### **1.5 CHAPTER SUMMARY**

Chapter 1 focused on the problem statement, objectives and research method in this study.

Chapter 2 investigates the factors that influence well-being for employees in the chemical industry.

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## **CHAPTER 2**

### **RESEARCH ARTICLE 1: A MODEL OF WELL-BEING OF EMPLOYEES IN THE CHEMICAL INDUSTRY**

## **A MODEL OF WELL-BEING OF EMPLOYEES IN THE CHEMICAL INDUSTRY**

### **ABSTRACT**

The aim of the study was to investigate the components of well-being. The study was done in the chemical industry, with a sample ( $N=490$ ) representing all different job levels in the organisation. A cross-sectional survey design was used. Measuring instruments were the Affectometer 2, the Life Orientation Test-Revised, the Organisational Commitment Questionnaire, the Minnesota Satisfaction Questionnaire, Maslach Burnout Inventory-General Survey, the Satisfaction with Life Scale, and the General Health Questionnaire. A principal factor analysis with a varimax rotation indicated a three-factor model of well-being. The first factor (“general well-being expectations”), consisted of satisfaction with life, positive and negative affect, optimism, pessimism, and professional efficacy. The second factor was labelled “motivation”, and included intrinsic and extrinsic job satisfaction, as well as affective commitment. The third factor (“energy”) included cynicism, exhaustion, and general health.

### **OPSOMMING**

Die doel van die studie was om ondersoek in te stel na die komponente van welstand. Die studie is onderneem in die chemiese bedryf, deur middel van 'n steekproef ( $N=490$ ) wat al die verskillende posvlakke in die organisasie verteenwoordig het. Daar is gebruik gemaak van 'n dwarsdeursnee-opnameontwerp. Die volgende meetinstrumente is gebruik: die Affektometer 2, die Hersiene Lewensoriëntasietoets, die Organisasieverbondenheidsvraelys, die Minnesota Tevredenheidsvraelys, die Maslach-Uitbrandingsvraelys – Algemene Opname, die Lewenstevredenheidskaal en die Algemene Gesondheidsvraelys. 'n Hooffaktoranalise met 'n varimaks-rotasie het op 'n driefaktormodel van welstand gedui. Die eerste faktor (“algemene welstandsverwagtinge”) het bestaan uit lewenstevredenheid, positiewe en negatiewe affek, optimisme, pessimisme, en professionele effektiwiteit. Die tweede faktor is geïdentifiseer as “motivering”, en het intrinsieke en ekstrasieke werksbevreëdiging sowel as affektiewe verbondenheid ingesluit. Die derde faktor (“energie”) het sinisme, uitputting en algemene gesondheid ingesluit.

Organisations are becoming increasingly aware of issues of employee well-being (Hooper, 2004). The ever increasing demands of the competitive and stressful workplace environment, personal relationships, time constraints and lack of a work-life balance are slowly but surely taking their toll on people's physical, emotional, spiritual and mental wellness. According to Corville and Bernardi (1999), job demands are increasing because of the use of new technology, for example e-mail, faxes, and cellular phones. The environment in which organisations operate has moved from relatively stable, simple, orderly, predictable and local, to one of discontinuous change, demands, time pressure, complexities, chaos, ambiguity, and globalisation; and success is measured in terms of relentless responsiveness, innovation, speed, flexibility, cost-effectiveness, and value-added (Corville & Bernardi, 1999; Veldsman, 2003). The traditional belief that more face time equals more commitment and productivity is old-school thinking (Corville & Bernardi, 1999; Lee, 2001).

Stress is also not a contributor to employee well-being – rather the opposite. Stress can be defined as a physiological and psychological reaction from a perceived imbalance between a demand and the individual's ability to meet the demand (Corville & Bernardi, 1999). A proactive approach is needed to protect employees and employers against the negative effects of stress and lifestyle diseases (Van der Merwe, 2005a). Gardyasz (2006) advises that, in order to attract and retain top talent, employers need to position themselves as companies that care about the well-being of their employees. This does not mean that well-being involves nothing more than leading a stress-free life with a healthy diet; well-being has diverse facets. Research indicates that well-being is more than just a physical issue. The aspects of psychological well-being play an important role (Hermon & Hazler, 1999), which leads to the conclusion that the well-being of employees is an important focus area for research and intervention (Maslach, Schaufeli, & Leiter, 2001).

Van der Merwe (2005c) defines well-being as a proactive, dynamic process whereby the individual and the group become aware of their life choices and responsibilities; this result in a decision to make the right choices towards a life of quality and well-being. Adler (1987) views well-being in terms of the ancient ethical conception of happiness as “a whole life well lived” because it is enriched by the cumulative possession of all the goods that a morally virtuous human being ought to desire. Kahn and Juster (2002) remind us that the debate between objective and subjective definitions of well-being persists. According to Kahn and Juster (2002), determinants include the environment, the neighbourhood, the community in

which people live, and the work they do. Davie (2001) defines corporate well-being in terms of healthier employees who produce more and cost less.

Van der Merwe (2005b) states that well-being could be incorporated into business strategy supporting business objectives, as this might lead to increased productivity and creativity by bringing out the best in people, ensuring their health, happiness and growth. With a positive, proactive drive for a better future for all, ensuring employee well-being will make all the difference to the bottom line profit margin (Van der Merwe, 2005b). When companies invest in well-being initiatives, return on investment increases, employee loyalty is positively influenced, and the company grows (Swanger, 2002; Van der Merwe, 2005a; Wilkinson, 2002). Sammer (2006) found that companies with well-being programmes were successful for four primary reasons: they had stronger and clearer lines of communication, they provided on-site health screenings, they provided meaningful but generally inexpensive incentives, and they achieved significant employee involvement. An important matter to take into consideration when developing a well-being programme is to know the demographics of the company, as this will ensure proper allocation of resources (Gardysz, 2006; Sammer, 2006; Spaeder, 2007).

The objective of the study was to determine the relationship between the various components that constitute well-being.

### **Models of well-being**

Ryff (Ryff, 1989; Ryff & Singer, 1998) proposes that the structure of psychological well-being comprises six distinct components: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Newton (1989) found that well-being was confused with cognitive processes that influence well-being, but Clegg and Wall's (1981) research indicated that work-related psychological well-being has been operationalised as job satisfaction. Affective well-being reflects the frequent experience of positive affects and the infrequent experience of negative affects (Diener & Larson, 1993). Affective well-being is multi-dimensional (Watson & Tellegen, 1985), can capture subtleties, complexities and changes in the experience of work (Briner, 1997), and can be measured in relation to the work domain (Warr, 1990). Lazarus and Folkman (1984) remind us that factors

that influence subjective reactions must be considered in order to gain a better understanding of how work influences well-being.

Warr (1990) states that affective well-being is multi-dimensional and can be measured in relation to the work domain. The components highlighted by Warr (1990) and Daniels (2000) will be investigated to look for similarities between the components as found by Warr (1990) and Daniels (2000) and the researcher in this study. Warr (1990) measured well-being across two axes for three different factors, namely anxious-comfortable, depressed-enthusiastic, and displeased-pleasure. Pleasure and arousal are retained as the horizontal and vertical dimensions, with two diagonal axes running between opposite quadrants. The vertical dimension, represented by pleasure, is made up of the dimensions as mentioned above. Principal types of affect may be located anywhere along the axes. The arousal dimension on its own is not considered to reflect well-being, thus the reason for unlabelled poles. The reason for the elongated shape is to indicate that pleasure is empirically accorded greater weight than arousal. Assessment of these three forms of well-being can provide basic information, depending on the addition of other measures when desired. The pleasure axis has often been measured through scales of reported job or life satisfaction. The depressed-enthusiastic axis is significantly closer to intrinsic job satisfaction than anxious-comfortable, whereas no difference was observed for extrinsic job satisfaction.

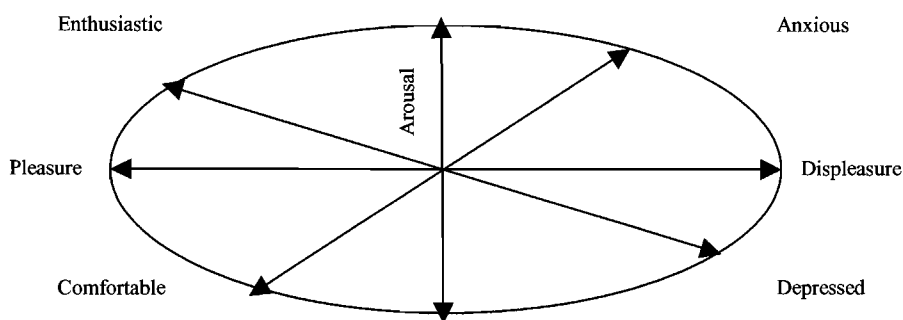
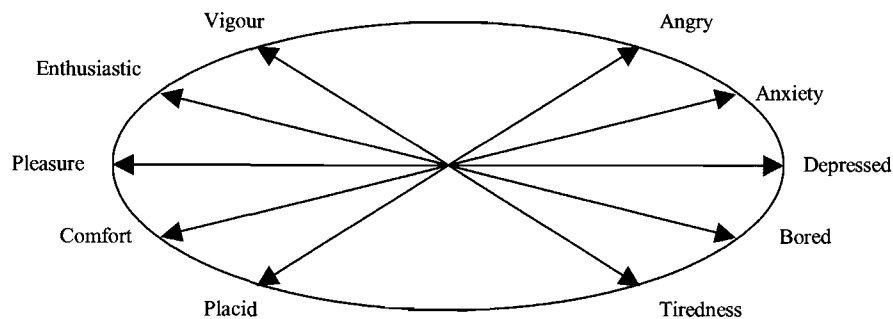


Figure 2. Warr's three principal axes for measuring affective well-being

Research done by Daniels (2000), Watson and Tellegen (1985), Haslam (1995), Watson, Clark, and Carey (1988) and Russell (1980) proposes development on the original model. Watson and Tellegen (1985) proposed the model to be represented in a two-dimensional circular space or circumplex, and suggested that the factors should be labelled positive and negative affect. High negative affect is represented by anxiety and hostility; low negative

affect is represented by a state of calmness and relaxation. High positive affect is represented by a state of pleasant arousal and low positive affect is represented by a state of unpleasantness and low arousal. Larsen and Diener contended in Daniels (2000) that positive and negative affect emerge as dominant factors. Russell (1980) labelled pleasantness-unpleasantness and arousal. These are orthogonal to each other, yet oblique to negative and positive affect. As negative affect comprises anger and anxiety, anxiety-comfort and angry-placid are closely aligned in the circumplex. These two factors are furthest from bored-enthusiastic and tiredness-vigour, which correspond more closely to positive affect and arousal respectively in Watson and Tellegen's (1985), and Russell's (1980) models. Bored-enthusiastic and tiredness-vigour are closely aligned because positive affect and arousal are adjacent in circumplex models. Depressed-pleasure lies between anxiety-comfort and bored-enthusiastic. This again reflects Russell's pleasantness axis situated between negative and positive affect; also the association between depression and low positive affect (Watson & Tellegen, 1985); and that depression can be characterised by low positive affectivity and high negative affectivity. However, anxiety can be characterised solely by high negative affectivity. These dimensions can be illustrated as follows:



*Figure 3.* A five-factor model of affective well-being

It is important to validate the measurement of affective well-being. Although this model is not recent, it is representative of the factors that are measured and investigated in this research.

Diverse types of well-being build communities, as some individuals prefer to be more interpersonal and relational; and others have a need for reflecting onto a deeply held purpose or for upholding the social order (Ryff & Singer, 1998). The difficulty is how to measure well-being – it being multi-dimensional. The multi-dimensional context will be investigated in different components made up of affect, dispositional optimism, organisational

commitment, job satisfaction, burnout, satisfaction with life, and health. When Warr's measures of well-being were modified, Daniels, Brough, Guppy, Peters-Bean, and Weatherstone (1997) explained that positive and negative affect indicate affective well-being (Diener & Larson, 1993); work-related affective well-being has often been operationalised as job satisfaction, and job satisfaction represents a positive affective orientation towards the job, or to intrinsic and extrinsic facts of the job (Clegg & Wall, 1981; Evans, 1969). Scheier and Carver (1985) regard optimism as a coping mechanism in stressful situations; therefore, this component requires separate attention. Lack of commitment might have a negative effect on the company and thus needs to be taken into consideration when evaluating well-being (Mathieu & Zajac, 1990). Maslach, Schaufeli, and Leiter (2001) indicate that burnout might be a response to work overload and thus results in different behavioural characteristics, possibly also in absenteeism. Satisfaction with life is a subjective evaluation by every individual according to Diener, Suh, Lucas, and Smith (1999), resulting in this component being investigated, as affective well-being can be influenced by this dimension. The typical indices of health focus on disease, illness, and negative concepts (Bowling, 1991) and not on well-being (Ryff & Singer, 1998). The efforts to move beyond medical and disease models of health provide important steps in the direction of construing health as states of well-being rather than ill-being (Ryff & Singer, 1998).

Research indicates that assessment instruments are notably weighted on the side of the physical problems. Positive health is not a medical question but rather an issue that requires meaning of the good life. Well-being is about the mind and the body and their interconnections and should be seen as a multi-dimensional dynamic process, as well-being is ultimately an issue of engagement in living, involving expression of a broad range of human potential, i.e. intellectual, social, emotional, and physical (Ryff & Singer, 1998). Another reason why measuring well-being is difficult is because individuals exhibit different cognitive and emotional reactions to seemingly similar environments (Campbell, Chew, & Scratchley, 1991). Literature supports well-being on different levels, but not only considering the affective element of well-being, coupled with the health dimension. This research investigates the possibility of considering the dimensions of Warr's model and testing it in the context of well-being in the chemical industry.

## **Components of well-being**

In this article, the emphasis is on the components of well-being, considered in relation to the effect it might have on the individual's health. Considering the above-mentioned models, the researcher explores the possibility that well-being could consist of six components, namely affect, dispositional optimism, organisational commitment, job satisfaction, burnout, life satisfaction, and, as a seventh component, health.

### **Affect**

The term affect is used to mean emotion, but spans wider than the spectrum of normal emotions. Affect includes and relates to feelings, emotions, moods, motivation, and certain drives and instincts, thus resulting in a positive affect scale as well as a negative affect scale (Schimmack, 2003; Watson & Tellegen, 1985). Extreme emotions such as joy, exhilaration, sadness, fear and hatred are included (Palmer, 1984; Stratton & Hayes, 1999). Affective experiences can be categorised into frequency, intensity and duration (Schimmack, Oishi, Diener, & Suh, 2000). According to Schimmack (2003), research indicates that while it is likely that positive feelings will be low when negative feelings are high, there is also growing evidence that positive affect and negative affect tend to function relatively independently (Clark & Watson, 1991; Diener & Emmons, 1984). High negative affect is represented by anxiety and hostility, while low negative affect is represented by calmness and relaxation (Watson & Tellegen, 1985).

### **Dispositional optimism**

Scheier and Carver's (1985) definition of optimism as a general expectation of positive experiences throughout one's life is one of the most common definitions. These authors regard optimism as a personality trait that can help people cope with the negative effects of stress. Research has shown that optimism is represented by three basic beliefs, namely positive outcome expectancies, positive efficacy expectancies, and positive unrealistic thinking. Positive outcome expectancies reflect the tendency to believe that one will generally experience good outcomes in life (Scheier & Carver, 1985). Positive efficacy refers to the global confidence in one's coping ability across a wide range of demanding situations (Schwarzer, 1994). Positive unrealistic thinking includes the strategy to cognitively distort

reality by believing that pleasant events are more likely to happen to the self than to others, and that negative events are less likely (Weinstein, 1980). For the purpose of this study, dispositional optimism will be used to measure enthusiasm.

Optimists are therefore indeed “masters of their own fate”, because they do not only believe that good things *will* happen, but also that they can *make* good things happen (Carver & Scheier, 2002). These authors suggest that optimists seem to initiate and to be involved in various activities, providing opportunities to acquire valuable knowledge about the positive and negative consequences of their actions.

Carver and Scheier (2002) regard optimism as a basic quality of personality. Optimism influences people’s orientation to events in their lives, people’s subjective experiences when confronting problems and the actions people engage in when trying to deal with these problems. Mäkikangas and Kinnunen (2003) found that time pressure at work was most strongly related to mental distress among female employees reporting low optimism. Different coping strategies used by optimists and pessimists could explain this result. Optimists seem to use more problem-focused coping strategies than pessimists. When problem-focused coping is not a possibility, optimists turn to strategies such as acceptance and positive reframing (Harju & Bolen, 1998).

Fry (1995) and Mäkikangas and Kinnunen (2003) have found dispositional optimism to be significantly negatively related to burnout, more specifically to the exhaustion component (for the purpose of this study referred to as tiredness). Relationships between optimism and distress have been examined in diverse groups of people facing difficulty or adversity (e.g. Aspinwall & Taylor, 1992; Long, 1993; Sumi, 1997). Evidence was found that optimists experience less distress than pessimists when dealing with difficulties in their lives. In line with Schweizer, Beck-Seyffer, and Schneider (1999), it can be suggested that individual well-being depends on optimism.

### Organisational commitment

Organisational commitment, defined as the psychological attachment of workers to their organisation, is one of the most enduring topics in the organisational sciences (Bauer & Green, 1998). Organisational commitment has been found to relate positively to desirable

work outcomes, including employee job satisfaction, motivation and performance, and negatively to absenteeism and turnover (Mathieu & Zajac, 1990). While organisational commitment seems to diminish in the presence of burnout (Leiter & Maslach, 1988), engagement is a useful indicator of commitment – and to such an extent that engaged employees are expected to be loyal and psychologically committed to the organisation (Blizzard, 2002). It can be concluded that people who are engaged in their jobs tend to be committed to their organisations, and vice versa. However, work engagement and organisational commitment do not always track closely together. Winter, Taylor, and Sarros (2000) found that although academics remain attached to their jobs/work activities, they do not exhibit the same levels of attachment to their institutions. Thus, although the two concepts are related, they are not identical – organisational commitment focuses on the organisation, whereas engagement is more concerned with the work itself (Maslach, Schaufeli, & Leiter, 2001).

#### Job satisfaction

Job satisfaction is the extent to which people like their jobs (Spector, 1997). Hamermesh (2000) states that job satisfaction is the result of the worker's weighting in his/her own mind of all the position's requirements. He views it as a single metric that allows the worker to compare the current job to other labour market opportunities (Hamermesh, 2000). Bettencourt and Brown (1997) define job satisfaction as the degree to which employees have a positive affective orientation toward employment by the organisation. Job satisfaction could also be defined as the affective reaction to a job where the incumbent's comparison of actual outcomes with the required outcomes is exceeded (Cranny, Smith, & Stone, 1992).

Research indicates that job satisfaction could be experienced if employees feel that their individual capacities, experience and values can be utilised in their work environment and that the work environment offers them opportunities and rewards (Dawis, 1992; Roberts & Roseanne, 1998). According to Clark and Oswald (1996), job satisfaction depends on comparison of income and a way of living; and is highest among the youngest and oldest workers. Research points to a positive and significant relationship between participation in the decision-making process and job satisfaction (Harrison & Hubbard, 1998; Knoop, 1995). Warr (1990) indicates a close relationship between intrinsic job satisfaction and the depressed-enthusiastic scale of his model.

Greenhaus, Parasuraman, and Wormley (1990) found that employees' sense of exclusion may play a critical role in explaining the connection between lack of opportunities experienced by employees who are different from the corporate "main stream" and their job satisfaction and well-being. It is also indicated that upward mobility could be linked to job satisfaction and employee well-being (Chemers, Oskamp, & Costanzo, 1995; DeSantis & Durst, 1996). Lack of resources, less rewarding work conditions, lack of support from supervisors and co-workers and heavy workloads are all contributing factors to job dissatisfaction (Mueller & Wallace, 1996; Tyler & Cushway, 1998). According to Clark, Oswald, and Warr (1996), other predictors of job dissatisfaction are workers in their thirties, employees with higher levels of education, employees in larger establishments, employees without opportunities for promotion and employees working longer hours than required. Sharma and Jyoti (2006) consider intrinsic factors (nature of the work, promotion and recognition, etc.), extrinsic factors (behaviour of superiors, co-workers, pay, etc.) and demographic variables (e.g. age, education level, sex, and marital status) when investigating job satisfaction.

Research done by Idson (1990) indicates that larger establishments structure work in a more formal way, which leads to job dissatisfaction even though larger establishments pay higher salaries. The freedom to influence how work should be done and the scheduling of hours have a positive effect on job satisfaction.

## Burnout

Burnout is a pathogenically defined construct that is characterised as a syndrome of exhaustion, depersonalisation and reduced professional efficacy (Maslach et al., 2001; Söderfeldt, Söderfeldt, Ohlson, Theorell, & Jones, 2000). Maslach et al. (2001) regard burnout as an individual experience that is specific to the work context. In the development of burnout, exhaustion emerges first in response to an overly demanding work environment (Leiter, 1993). Demerouti, Bakker, Nachreiner, and Schaufeli (2001) characterise cynicism as a specific kind of withdrawal or mental distancing from recipients, which, in other jobs, may manifest itself as alienation or disengagement regarding the job and the work role.

Reduced professional efficacy is indicative of individuals who experience a growing sense of inadequacy about their ability to help clients, and who evaluate themselves in terms of

declined competence and productivity at work (Maslach, 1998). According to Maslach et al. (2001), burnout researchers have focused extensively on quantitative job demands and have found that burnout is a response to work overload. Maslach, Jackson, and Leiter (1996) hypothesised that burnout, as a result of the presence of particular demands and the absence of particular resources, can lead to various negative outcomes, such as physical illness, staff turnover and absenteeism. Research has linked burnout to a variety of mental and physical health problems (Lee & Ashforth, 1990; Maslach, 1982), increased absenteeism (Leiter & Harvie, 1998), and decreased quality and quantity of job performance (Maslach & Jackson, 1984). Eventually, individuals may leave the job or profession as a culminating effect of burnout (Jackson & Simpson, 2001; Watts, Cox, Wright, Garrison, Herkimer, & Howze, 1991).

Burnout is used to measure the vigour-tiredness scale of the five-factor model as described by Daniels (2000).

#### Life satisfaction

According to Diener, Emmons, Larson, and Griffin (1985) and Pavot, Diener, Colvin, and Sandvik (1991), life satisfaction is an individual cognitive-judgemental process. In addition, Diener, Suh, Lucas, and Smith (1999) state that a person is as well as he perceives himself to be. Conceptions of well-being should thus involve components such as life satisfaction. Satisfaction is an evaluative appraisal of something, or a state of mind (Saris, Veenhoven, Scherpenzeel, & Bunting, 1996). The individual's appraisal of life or life satisfaction is done using his/her personal self-established standard, which is not externally imposed (Diener et al., 1985; Pavot et al., 1991). According to Saris et al. (1996), life satisfaction is the extent to which an individual evaluates the general quality of his/her life as a whole as positive. Life satisfaction is therefore defined by Diener et al. (1985) and Pavot et al. (1991) as "a global evaluation by the person of his or her life" or how much the person likes the life he/she leads (Saris et al., 1996). As the pleasure-depression axis of Warr's model indicates, life satisfaction might be indicative of well-being (Warr, 1990).

Saris et al. (1996) and Pavot et al. (1991) also argue that the evaluation of life involves all the relevant criteria in the mind of the individual (i.e. religion, love life, health, wealth, how well expectations are likely to be met, etc.). An individual does, however, not assign the same

weight to each domain and although they might be satisfied with most domains in their life, they might still be dissatisfied overall because of the impact of one specific domain. Saris et al. (1996) point out, “there may be too much excitement in life, and too few other qualities”. According to Pavot et al. (1991), the opposite is also true: one can be satisfied notwithstanding the fact that he/she is unhappy with a particular domain.

Life is assessed in different time periods (Saris et al., 1996; Pavot, Diener, & Sub, 1998): life in the past, life now and in the future. Rice (1984) found that overall life satisfaction is defined as the degree to which the experience of an individual’s life satisfies that individual’s wants and needs, both physically and psychologically. A positive outlook can have implications of how well an individual might cope with current situations. Pavot et al. (1998) reason that an optimistic outlook could moderate stressors, because the individual will cope better with current stressful situations. It can therefore be reasoned that a negative outlook will affect the ability to cope with current stressful work or life situations. An employee with a high level of satisfaction with his/her past and present will be able to deal more effectively with stressors in his/her current environment.

The impact of stress on life satisfaction has been researched (Simons, Aysan, Thompson, Hamarat, & Steele, 2002), and only one study was found that suggested life satisfaction as a predictor of stress (Chiu, Man, & Thayer, 1998).

## Health

Possible unemployment is a dangerous cause of work stress that is associated with serious health problems – amongst others cardiovascular illnesses such as hypertension (Sutherland, 1990). Other research has also indicated that prolonged stress and burnout may have a negative influence on an individual’s physical health. Already in 1936, Hans Seyle (in Carson & Butcher, 1992) demonstrated the detrimental effects of stress on the immune system: individuals may show an increase in infectious diseases like colds and flu during periods of heightened stress, including diffuse joint and muscle pain, disturbances of the intestines with loss of appetite and weight loss. Stress and burnout may in the long term lead to heart disease and blood-pressure problems (Hawkins & Larson, 1984). It seems clear that burnout may lead to reduced physical health, which makes it worth investigating in this research.

According to Siu (2002) and Winefield, Gillespie, Stough, Dua, and Hapuararchchi (2002), there is significant evidence to suggest that chronic and high levels of occupational stress, if left unchecked, are related to mental and physical well-being, job dissatisfaction, absenteeism, stress-related injuries, turnover and intention to quit. They have shown a significant correlation between higher levels of psychological strain and incidences of self-reported, stress-related health symptoms such as sleeping difficulties, headaches, colds and other viral infections.

In a study in an insurance company (Coetzer, 2004), deteriorating physical and psychological health was found to be the major outcome of perceived stress. This study indicated that employees in the company suffering of high levels of burnout, a lack of resources and high demands would develop physical and psychological health problems. The ‘burnt-out’ employee is likely to experience stress-related health problems, since burnout is frequently linked with illness. According to the researcher, the axes of the models used will be representative of the negative aspects, as health deteriorates when an individual is not well – as indicated by Coetzer (2004).

## **Hypothesis**

The hypothesis of this study is as follows:

H1: Well-being consists of various components which correlate with one another and affect the experience of affective well-being.

## **METHOD**

### **Research design**

A cross-sectional survey design, where a sample is drawn from a population at a particular point in time (Shaughnessy & Zechmeister, 1997), was used to achieve the research objectives.

## **Participants**

Surveys were distributed to 501 randomly selected employees in Sasolburg, Secunda and Rosebank. A total of 501 completed questionnaires were returned. Only 490 of the questionnaires were used for data analysis, with 11 not useable on account of missing data. This represented a participation rate of 97,8%.

Table 1

*Characteristics of the Participants (N=490)*

Item	Category	Frequency	Percentage
Age	<30	77	15,4
	30 – 39	147	29,2
	40 – 49	182	36,2
	> 50	91	18,2
	Missing	5	1
Education	Grade 12 or lower	256	51
	Diploma	135	26,9
	4-year degree or honours	70	14
	Postgraduate degree	23	4,6
	Missing	18	3,6
Gender	Male	336	66,9
	Female	150	29,9
	Missing	16	3,2
Home language	Afrikaans/English	364	72,5
	African	126	25,1
	Missing	12	2,4
Years of service	< 5	118	23,5
	5 – 14	135	26,9
	15 – 24	179	35,6
	>25	59	11,8
	Missing	11	2,2

According to Table 1, 36,2% of the respondents were between the ages of 40 and 49 years. Just over half of the participants (51%) held a grade twelve qualification or less. The gender distribution (more than two thirds males) compared well with the demographics of the company. The language representation of the sample also corresponded well with the demographics of the area – with 72,5% reporting either Afrikaans or English as their home

language, and only 25,1% of the respondents reporting Sesotho, isiXhosa or isiZulu as their first language. Possible reasons for missing data might be that individuals feared being identified or did not understand the questions.

### **Measuring battery**

*The Affectometer 2* (AFM) (Kammann & Flett, 1983) was used to measure the general well-being or sense of well-being in recent experience. The AFM (shortened version) is a 20-item scale that gives a bottom-line indication of quality of life as experienced on an affective and emotional level. The overall level of well-being or happiness is conceptualised as the extent to which positive feelings dominate over negative feelings. The subscales of the AFM measures positive affect and negative affect as supported by Du Toit (2005). Respondents evaluate themselves on a 5-point frequency scale ranging from 1 (*not at all*) to 5 (*all the time*). A simple component analysis was conducted on two dimensions of affect (i.e. negative affect and positive affect). Two related factors, which explained 39,7% of the total variance, were extracted. Next, a principal factor analysis with a direct oblimin rotation was conducted on these dimensions of affect. The results showed the positive affect formed the first factor and negative affect formed the second factor. Kamman and Flett (1983) reported alpha reliabilities of 0,88 to 0,93 as well as indications of validity. Wissing and Van Eeden (1994) reported alpha coefficients for positive affect between 0,91 and 0,86, and between 0,83 and 0,90 for negative affect in South African studies.

*The Life Orientation Test-Revised* (LOT-R) (Scheier, Carver & Bridges, 1994), a 10-item measure, was used to measure dispositional optimism. Six items contribute to the optimism score and four items are fillers. The original Life Orientation Test, which hypothesised a two-factor structure of optimism (i.e. optimism and pessimism), was questioned (Harju & Bolen, 1998). Follow-up analysis demonstrated a one-factor structure, indicating that the LOT-R measures a continuum of high, average and low optimism/pessimism (Scheier et al., 1994). The LOT-R measures on a five-point Likert scale ranging from 5 (*I strongly agree*) to 1 (*I strongly disagree*). The LOT-R was found to have adequate internal consistency ( $\alpha = 0,78$ ) and excellent convergent and discriminant validity (Scheier et al., 1994). Based on a sample of 204 college students, Harju and Bolen (1998) obtained a Cronbach alpha coefficient of 0,75. The statistically significant  $\chi^2$  value of 20,82 ( $df = 8; p = 0,01$ ) indicated a good overall

fit of the originally hypothesised LOT-R model. The fit statistics indicated excellent fit of the measurement model to the data.

*The Organisational Commitment Questionnaire (OCQ)* (Meyer, Allen, & Smith, 1993) was used to measure the affective organisational commitment of the participants. This measure consists of 18 items and measures on a five-point Likert scale ranging from 5 (*I strongly agree*) to 1 (*I strongly disagree*). Inter-correlations between populations were found to be consistent above 0,90 (Allen & Meyer, 1990). The internal consistency for this subscale of the questionnaire has been confirmed at the 0,80 level (Suliman & Iles, 2000). The three components of the OCQ are affective, continuance and normative commitment, and can be defined as follows: affective commitment refers to employees' emotional attachment to, identification with, and involvement in the organisation; continuance commitment is based on the costs that employees associate with leaving the organisation; normative commitment refers to employees' feelings of obligation to remain with the organisation (Allen & Meyer, 1990; Meyer et al., 1993). The various fit statistics indicated an incremental improvement from the first model fit with the empirical data. Most of the fit indices indicated an acceptable fit with the data. This model represented acceptable comparative evidence of fit between the empirical data and a theoretical model in line with the theoretical premises of the OQC. No further modification of the model was deemed necessary.

The *Minnesota Satisfaction Questionnaire (MSQ)* (Weiss, Davis, England, & Lofquist, 1967) indicates how satisfied or dissatisfied respondents are with their jobs by asking respondents to rate themselves on 20 questions by using a five-point Likert scale ranging from 1 (*very dissatisfied*) to 5 (*very satisfied*). The revised MSQ form measures intrinsic job satisfaction and extrinsic job satisfaction. Hirschfeld (2000) found that a two-factor model (intrinsic and extrinsic job satisfaction) was superior to a one-factor model (total job satisfaction). Alpha coefficients were found to be ranging from 0,87 to 0,95, which supports the internal consistency of the scale (Hirschfeld, 2000; Lam, Baum, & Pine, 1998). The statistical  $\chi^2$  value of 506,26 ( $df = 165$ ;  $p = 0,0$ ) was indicative of a better overall fit to the theoretical two-factor model of the MSQ. The goodness-of-fit indices also supported this finding by not reaching all, but some of the recommended critical values. The various fit statistics indicated an incremental improvement from the first model fit with the empirical data. This model represented acceptable comparative evidence of fit between the empirical data and a

theoretical model in line with the theoretical premises of the MSQ. No further modification of the model was deemed necessary.

The *Maslach Burnout Inventory – General Survey* (MBI-GS) (Schaufeli, Leiter, Maslach, & Jackson, 1996) was used to measure burnout. The MBI-GS consists of 16 items, which are divided into three subscales: Exhaustion, Cynicism, and Professional Efficacy. All items are scored on a seven-point frequency rating scale ranging from 0 (*never*) to 6 (*everyday*). The internal consistencies (Cronbach alpha coefficients) reported by Schaufeli et al. (1996) varied from 0,87 to 0,89 for Exhaustion; 0,73 to 0,84 for Cynicism; and 0,76 to 0,84 for Professional Efficacy. Test-retest reliabilities after one year were 0,65 for Exhaustion; 0,60 for Cynicism; and 0,67 for Professional Efficacy (Schaufeli et al., 1996). Storm and Rothmann (2003) confirmed the three-factor structure of the MBI-GS in a sample of 2 396 SAPS members, but recommended that Item 13 be dropped from the questionnaire. The following Cronbach alpha coefficients for the MBI-GS in South Africa were obtained: Exhaustion: 0,88; Cynicism: 0,79; Professional Efficacy: 0,78 (Storm & Rothmann, 2003).

The *Satisfaction with Life Scale* (SWLS) is defined as a global evaluation by a person of his/her life and will be used to measure satisfaction with life (Diener, Emmons, Larson, & Griffin, 1985). The SWLS is a five-item instrument that was developed by Diener et al. (1985) to measure global cognitive judgements of one's life. According to Diener et al. (1985), the SWLS was designed around the idea that one should ask respondents about the overall judgement of their lives in order to measure the concept of life satisfaction. Participants are asked to indicate their degree of agreement or disagreement on a seven-point Likert scale ranging from 1 (*I strongly disagree*) to 7 (*I strongly agree*). Scores on the SWLS range from 5 to 35, with higher scores indicating greater life satisfaction. Diener et al. (1985) reported a two-month test-retest correlation coefficient of 0,82 and a Cronbach alpha coefficient of 0,87. The inter-item correlation matrix was factor analysed, using principal axis factor analysis. According to the eigenvalues, a single factor emerged, accounting for 66% of the variance (Diener et al., 1985). A simple principal component analysis was carried out on the 5 items of the Satisfaction with Life Scale (SWLS), which resulted in a one-factor solution explaining 63,78% of the variance.

*Health Questionnaire (GHQ)* (Cartwright & Cooper, 2002) utilising the health subscales of ASSET (which refers to an Organisational Stress Screening Evaluation Tool) was developed

by Cartwright and Cooper (2002) to assess respondents' level of health. Health is measured on a five-point Likert scale ranging from 1 (*never*) to 5 (*always*). The health subscales consist of 18 items arranged on two subscales: physical health and psychological well-being. All items on the physical health subscale relate to physical symptoms of stress. The role of this subscale is to provide a measure of insight into physical health, not an in-depth clinical diagnosis. The items listed on the psychological well-being subscale are symptoms of stress-induced mental ill health. Johnson and Cooper (2003) found that the psychological well-being subscale has good convergent validity with an existing measure of psychiatric disorders, namely the General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988). A simple principal component analysis was carried out on the 18 items of the General Health Questionnaire, which resulted in a one-factor solution, which explained 42,53% of the variance.

### **Statistical analysis**

The statistical analysis was carried out on the SPSS Program (SPSS Inc., 2003) and the Amos Program (Arbuckle, 1999). Cronbach alpha coefficients were computed to assess the reliability of the constructs that were measured in this study. Prior to principal factor extraction, principal component extraction was done to estimate the number of factors, the presence of outliers and the factorability of the correlation matrices. Descriptive statistics were also used to explore the data. Exploratory factor analyses and Cronbach alpha coefficients were then computed to assess the validity and reliability of the constructs which were measured in this study. Cronbach alpha coefficients were used to determine the internal consistency of the measuring instruments (Clark & Watson, 1995). Exploratory factor analyses were carried out to investigate the construct validity of the measuring instruments and to prepare a test of a theoretical model in a path analysis, following a two-step procedure. Firstly, a simple principal components analysis was conducted on the constructs that form part of the measurement model, including affect, dispositional optimism, organizational commitment, job satisfaction, burnout, life satisfaction, and health. The eigenvalues and scree plot were studied to determine the number of factors. Second, a principal factor analysis with a direct Oblimin rotation was conducted if factors were related, and a principal factor analysis with a varimax rotation was used if the obtained factors were not related (Tabachnick & Fidell, 2001).

## RESULTS

### Descriptive statistics

Table 2 presents the practically and statistically significant correlations between the different variables in developing a model of affective well-being. Inspection indicates that Positive Affect is positively and significantly related to Satisfaction with Life and negatively and significantly related to Health (both large effects). Positive Affect is practically significantly (medium effect) and positively related to Intrinsic and Extrinsic Job Satisfaction and Professional Efficacy, but negatively related (medium effect practically significant) to Negative Affect and Exhaustion. Negative Affect is practically significantly and negatively related to Positive Affect (medium effect). Optimism is practically significantly (medium effect) and positively related to Positive Affect and negatively related to Negative Affect. Pessimism is practically significantly (medium effect) and positively related to Negative Affect. Intrinsic Job Satisfaction is positively related (medium effect) to Positive Affect, Affective Commitment, and Optimism. Extrinsic Job Satisfaction is positively related (large effect) to Intrinsic Job Satisfaction. Extrinsic Job Satisfaction is practically significantly (medium effect) related to Positive Affect, and Affective Commitment. Cynicism is practically significantly (medium effect) and positively related to Negative Affect and Extrinsic Job Satisfaction, but negatively related (medium effect) to Affective Commitment. Exhaustion is positively related (large effect) to Cynicism. Exhaustion is positively related (medium effect) to Negative Affect. Exhaustion is negatively related (medium effect) to Positive Affect, Affective Commitment, and Extrinsic Job Satisfaction. Professional Efficacy is positively related (medium effect) to Positive Affect, and Intrinsic Job Satisfaction. Satisfaction with Life is positively related (large effect) to Positive Affect and positively related (medium effect) to Optimism, Intrinsic Job Satisfaction, and Extrinsic Job Satisfaction. Satisfaction with Life is negatively related (medium effect) to Negative Affect. Health is positively related (medium effect) to Negative Affect, and Cynicism, and negatively related (medium effect) to Satisfaction with Life. Health is negatively related (large effect) to Positive Affect, and positively related (also large effect) to Exhaustion.

The few correlations that were not statistically significant were the correlations with Pessimism and Extrinsic Job Satisfaction, as well Pessimism and Affective Commitment.. Professional Efficacy and Cynicism were also not statistically significant.

Table 2

*Descriptive Statistics of the Measuring Instruments*

	Mean	SD	$\alpha$	1	2	3	4	5	6	7	8	9	10	11
1. Positive Affect	37,43	6,08	0,80	-	-	-	-	-	-	-	-	-	-	-
2. Negative Affect	19,12	6,31	0,82	-0,45 <sup>+</sup>	-	-	-	-	-	-	-	-	-	-
3. Optimism	11,32	1,90	0,61	0,49 <sup>+</sup>	-0,33 <sup>+</sup>	-	-	-	-	-	-	-	-	-
4. Pessimism	8,27	2,28	0,61	-0,18 <sup>*</sup>	0,40 <sup>+</sup>	-0,10 <sup>*</sup>	-	-	-	-	-	-	-	-
5. Affective Commitment	17,72	3,57	0,71	0,21 <sup>*</sup>	-0,16 <sup>*</sup>	0,17 <sup>*</sup>	0,01	-	-	-	-	-	-	-
6. Intrinsic Job Satisfaction	45,80	6,86	0,86	0,38 <sup>+</sup>	-0,27 <sup>*</sup>	0,35 <sup>+</sup>	-0,10 <sup>*</sup>	0,42 <sup>+</sup>	-	-	-	-	-	-
7. Extrinsic Job Satisfaction	26,33	6,07	0,84	0,31 <sup>+</sup>	-0,18 <sup>*</sup>	0,21 <sup>*</sup>	-0,04	0,49 <sup>+</sup>	0,68 <sup>++</sup>	-	-	-	-	-
8. Cynicism	9,57	4,53	0,76	-0,20 <sup>*</sup>	0,32 <sup>+</sup>	-0,12 <sup>*</sup>	0,10 <sup>*</sup>	-0,35 <sup>+</sup>	-0,28 <sup>*</sup>	0,36 <sup>+</sup>	-	-	-	-
9. Exhaustion	9,70	7,66	0,90	-0,40 <sup>+</sup>	0,36 <sup>+</sup>	-0,19 <sup>*</sup>	0,10 <sup>*</sup>	-0,33 <sup>+</sup>	-0,28 <sup>*</sup>	-0,32 <sup>+</sup>	0,51 <sup>++</sup>	-	-	-
10. Professional Efficacy	28,61	6,57	0,74	0,34 <sup>+</sup>	-0,26 <sup>*</sup>	0,22 <sup>*</sup>	-0,18 <sup>*</sup>	0,14 <sup>*</sup>	0,38 <sup>+</sup>	0,16 <sup>*</sup>	0,07	-0,09 <sup>*</sup>	-	-
11. Satisfaction with Life	24,30	6,30	0,85	0,51 <sup>++</sup>	-0,43 <sup>+</sup>	0,43 <sup>+</sup>	-0,15 <sup>*</sup>	0,25 <sup>*</sup>	0,38 <sup>+</sup>	0,34 <sup>+</sup>	-0,20 <sup>*</sup>	-0,29 <sup>*</sup>	0,17 <sup>*</sup>	-
12. Health	35,70	11,59	0,92	-0,50 <sup>++</sup>	0,49 <sup>+</sup>	-0,23 <sup>*</sup>	0,18 <sup>*</sup>	-0,15 <sup>*</sup>	-0,18 <sup>*</sup>	-0,18 <sup>*</sup>	0,30 <sup>+</sup>	0,60 <sup>++</sup>	-0,18 <sup>*</sup>	-0,33 <sup>+</sup>

\*  $p \leq 0,05$  (statistically significant)

+  $r \geq 0,30$  (practically significant) (medium effect)

++  $r \geq 0,50$  (practically significant) (large effect)

Table 3

*Principal Factor Analysis of Well-being*

	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>
Positive Affect	<b>0,70</b>	0,11	-0,10
Negative Affect	<b>-0,63</b>	0,06	0,25
Optimism	<b>0,53</b>	0,15	0,10
Satisfaction with Life	<b>0,52</b>	0,21	-0,05
Professional Efficacy	<b>0,45</b>	0,14	0,22
Pessimism	<b>-0,36</b>	0,11	0,04
Extrinsic Job Satisfaction	0,01	<b>0,80</b>	-0,10
Intrinsic Job Satisfaction	0,26	<b>0,76</b>	0,11
Affective Commitment	-0,03	<b>0,55</b>	-0,20
Exhaustion	-0,19	-0,15	<b>0,69</b>
Cynicism	0,05	-0,29	<b>0,58</b>
Health	-0,49	0,11	<b>0,50</b>

A principal factor analysis was carried out on the data reflected in Table 3, which resulted in three factors. Factor 1, General Well-being Expectations, consists of Positive Affect, low Negative Affect, Optimism, Satisfaction with Life, Professional Efficacy, and low Pessimism. The second factor, Motivation, consists of Extrinsic Job Satisfaction, Intrinsic Job Satisfaction, and Affective Commitment. The third factor, Energy, consists of Exhaustion, Cynicism, and Health.

## DISCUSSION

The objective of this study was to assess the correlations between various components of well-being in the chemical industry, as well as how these correlations affect the experience of affective well-being. These components were affect, dispositional optimism, organisational commitment, job satisfaction, burnout, satisfaction with life, and health. A three-factor structure of work-related affective well-being was found in this study. The first factor represented a cluster called general well-being expectations, consisting of satisfaction with life, positive and negative affect, optimism, pessimism, and professional efficacy. The second

factor represented motivation and consisted of intrinsic and extrinsic job satisfaction as well as affective commitment. The third factor was called energy and represented cynicism, exhaustion, and general health.

General well-being expectations as a cluster is made up of a variety of components and had the following findings: positive and negative affect indicates well-being (Diener & Larson, 1993) and affective well-being is multi-dimensional (Warr, 1990; Watson & Tellegen, 1985). Positive affect has a negative relationship with negative affect and with exhaustion and health. Although research (Cohen & Pressman, 2006) indicates that positive affect has been ignored for quite some time, positive affect and physical health do form patterns regarding lower morbidity and decreased pain. Positive affect has a positive relationship with optimism, intrinsic and extrinsic job satisfaction (Cropanzano & Wright, 2001), and satisfaction with life. Sirgy (2006) states that well-being is directly influenced by positive and negative affect in the working context or as referred to as job satisfaction. Employee well-being is defined by the link between job satisfaction and life satisfaction (Kohan & O'Connor, 2002; Sirgy, 2006). The greater the positive influences, the greater the satisfaction with life (Sirgy, 2006), which can be substantiated with this research, which found a positive relationship between satisfaction with life and positive affect, optimism and job satisfaction. In support of this, Diener, Suh, Lucas, and Smith (1999) state that a person is as well as he perceives himself to be. Added to this statement, the individual's appraisal of life is based on personal self-established standards and not on externally imposed factors (Diener, Emmons, Larson, & Griffin, 1985; Pavot, Diener, Colvin & Sandvik, 1991). Optimism is a coping mechanism (Scheier & Carver, 1985; Strutton & Lumpkin, 1992); Nelson (1990) found a correlation between coping and positive and negative affect. The research found a high correlation with both positive and negative affect. According to Lee, Hwang, Kim, and Daly (2004), job satisfaction and burnout can predict life satisfaction. The results again support this finding, as satisfaction with life correlates positively with intrinsic and extrinsic job satisfaction, and is practically significant to cynicism and exhaustion. Health is also negatively related to satisfaction with life. Although previous research (Fry, 1995; Mäkikangas & Kinnunen, 2003) suggests that dispositional optimism could be negatively related to burnout, this research found no correlations between the mentioned components.

The motivation cluster had the following findings: work-related psychological well-being can be operationalised as job satisfaction, according to Clegg and Wall (1981) and Evans (1969).

This statement is supported by research done by Cropanzano and Wright (2001), where happiness is operationalised as job satisfaction when positive affect is present and negative affect is absent (as found in this research as non-significant). Research done by Kohan and O'Connor (2002) supports that job satisfaction is associated with positive affect. Research by Hirschfeld (2000) indicates that job satisfaction consists of two dimensions, i.e. intrinsic job satisfaction and extrinsic job satisfaction. The research confirms a strong relationship between extrinsic job satisfaction and intrinsic job satisfaction. Organisational commitment relates positively to job satisfaction (Mathieu & Zajac, 1990) and, more specifically, affective commitment relates positively to all the job satisfaction variables (Schneider, 2003). In this study, intrinsic and extrinsic job satisfaction related positively to affective commitment, and affective commitment did not correlate well with any of the other components, but an explanation of this occurrence might be the low alpha coefficients that were found. A lack of commitment might have a negative impact on the organisation and must be measured according to Mathieu and Zajac (1990). Earlier research (Angle & Perry, 1981; Williams & Hazer, 1986; DeCotiis & Summers, 1987) views job satisfaction as a determinant of commitment. According to Bood, Archer, and Norlander (2004), the combination of dispositional optimism, low negative affect and high positive affect indicates a healthy profile. In this research, optimism had a high positive affective correlation and a negative correlation with negative affect, which, according to the research mentioned, might be indicative of a healthy profile. Furthermore, pessimism correlated positively with negative affect, and optimism correlated positively with positive affect. Previous research confirms this finding (Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992).

Energy as a cluster could be described as burnout coupled with health. According to Ryff and Singer (1998), health is a state of well-being rather than ill-being. High levels of burnout may lead to health problems (Coetzer, 2004; Lee & Ashforth, 1990; Maslach, Jackson, & Leiter, 1996; Maslach, 1982), which correlates with the positive relationship health has with both exhaustion and cynicism – as found in this research. Negative and positive affect have a stronger relationship to burnout symptoms, i.e. cynicism and exhaustion (Pruchno & Meeks, 2004) as supported by the high correlations found in this study. A study regarding health and positive and negative affect (Casten, Lawton, Winter, Kleban, & Sando, 1997; Little, Simmons, & Nelson, 2007) correlates with the relationship that the study found regarding the significant relationship between health and positive affect, except that health correlated negatively to positive affect, but positively to negative affect. Casten et al. (1997) support the

finding by stating that negative affect is associated with poor health. Similar to research done by Tan and Akhtar (1998), this research found that burnout had no significant impact on affective commitment. Bilge (2006) states that intrinsic job satisfaction is the best predictor of burnout, and that burnout and job dissatisfaction can increase professional efficacy. This research found practical significance between exhaustion, cynicism and intrinsic job satisfaction, which is supported by research done by Bilge (2006).

This research identified a three-factor structure using seven different components as based on a combination of Warr's original model (1990) and other research that followed (Daniels, 2000).

Limitations of the study were that the components were analysed and described, but no longitudinal studies were done. Warr's model does not include health as was suggested in this research; thus the researcher based suggestions on statistical correlations.

## **RECOMMENDATIONS**

Ryff and Singer (1998) pointed out nearly a decade ago that well-being needs to be measured as diverse types of well-being build communities. If well-being is measured and monitored over a period of time the experience of affective well-being could be positively influenced if the respective components receive focused interventions.

Gardyas (2006) advises that, in order to attract and retain top talent, employers need to position themselves as companies that care about the well-being of their employees. With the combined comments that the well-being of employees is an important focus area for research and intervention (Maslach, Schaufeli, & Leiter, 2001) the chemical industry should utilise the resources as identified in this research and design a tailor-made program to suit the organisation's needs.

This research again emphasises that different demographical characteristics influences well-being and should be considered as such. Further analysis of the data should be undertaken in future studies and will add great value, as the structural equation modelling seems to be a potentially useful contributor to the understanding of the relationships between variables.

Another questionnaire should be used to also measure the angry-placid factor and not combine it with anxiety-comfort. A longitudinal study is suggested to determine if there are any changes in work well-being in the chemical industry especially if focused interventions are launched.

Some of the results of this research are contradictory to previous research, which indicates a need for further investigation.

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## **CHAPTER 3**

### **RESEARCH ARTICLE 2: VALUES AND CAREER ANCHORS OF EMPLOYEES IN THE CHEMICAL INDUSTRY**

# **CAREER ANCHORS AND VALUES OF EMPLOYEES IN THE CHEMICAL INDUSTRY**

## **ABSTRACT**

The aim of this study was to investigate the reliability and construct validity of the Values Scale (Super & Nevill, 1985) and Career Orientation Inventory (Schein, 1978) and to investigate differences between the career anchors and values of employees in different demographic groups in the chemical industry. A cross-sectional survey design was used. The sample consisted of employees on different job levels within the chemical industry ( $N=490$ ). The values were clustered in the following eight factors: Improvement of the Self and Others, Physical Activity and Risk, Autonomy, Social Relations, Prestige, Economic Rewards and Security, Aesthetics, and Cultural Connectedness and can be regarded as life values. The career anchors were also sorted into only six factors being: Challenge, Influence, Security, Service, Autonomy, and Management, and can be described as work values.

## **OPSOMMING**

Die doel van hierdie studie was om ondersoek in te stel na die betroubaarheid en konstrugeldigheid van die Waardesskaal (Super & Nevill, 1985) en Loopbaan-oriëntasie-vraelys (Schein, 1978) en om ondersoek in te stel na verskille tussen die loopbaanankers en waardes van werknemers in verskillende demografiese groeperinge in die chemiese bedryf. Daar is gebruik gemaak van 'n dwarsdeursnee-opnameontwerp. Die steekproef het bestaan uit werknemers op verskillende posvlakke binne die chemiese bedryf ( $N=490$ ). Die waardes is saamgegroepeer in die volgende agt faktore: Verbetering van die Self en Andere, Fisieke Aktiwiteit en Risiko, Outonomie, Sosiale Verhoudinge, Prestige, Ekonomiese Belonings en Sekuriteit, Estetika, en Kulturele Verbondenheid en kan beskou word as lewenswaardes. Die loopbaanankers is saamgegroepeer in ses faktore, naamlik: Uitdaging, Invloed, Sekuriteit, Diens, Outonomie, en Bestuur en kan beskryf word as werkwaardes.

Organisations worldwide are in flux, and this brings new demands to employees. In South African organisations, change and transformation have become a way of life. Changing customer demands, international competition and economic trends, and worker expectations are some of the driving forces behind the unavoidable change (Erasmus, Van Wyk, & Schenk, 2000). Individuals have to take ownership for creating a career that gives and creates meaning (Collin, 1998; Erasmus et al., 2000), while the organisation only plays a supportive role (Erasmus et al., 2000).

The well-being of an individual is in the best interest of communities and organisations (Harter, Schmidt, & Keyes, 2002). The presence of positive emotional states and the individual's relationship within the workplace accentuates worker performance and quality of life as research leads us to believe that positive feelings and positive perceptions may lead to quality of life for the employee (Harter et al., 2002). It is when environments provide, and people seek out interesting, meaningful, and challenging tasks, that employees might find what Brim (1992) describes as manageable difficulties; Csikszentmihalyi (1997) calls it an optimal state. From the well-being perspective, a healthy workforce should result in happier and more productive employees (Harter et al., 2002).

Dawis and Lofquist (1984) and Holland (1997) assume in their theories that the congruence or fit between a person and his or her environment is an important predictor of work outcomes, employee well-being, and vocational choice. There is consistent and compelling evidence that fit (or misfit) between individual preferences for various tasks and the characteristics actually present in the job is related to a variety of health and well-being outcomes (Shaw & Gupta, 2004).

The earliest literature on person-job fit highlighted how important it is for individuals to find jobs which fit both their personal needs and their skills sets (Argyris, 1964; Holland, 1959). Kristof (1996) and Ostroff, Shin, and Feinberg (2002) found that when young adults achieve a fit between their career orientations and vocational choices, they are more likely to derive satisfaction from their occupations and will have more stable career paths. Some research focus on fit between the individual and the occupation (such as Holland, 1959), while others focus on fit between the organisation and the job (such as Argyris, 1964). Despite the overlapping interest from career psychology and the influence of the nature of organisations on career, there is little interaction or collaboration between those working in these two areas

(Collin, 1998). This results in different sets of research focusing on skills, interests or values, while different dimensions of the environment (e.g. the required work duties of a job, the dominant values in a profession, or the culture of a firm) have been used on the institutional side of the equation (Meir, Hadas, & Noyfeld, 1997). Little synergy is achieved in developing appropriate new approaches to the multidimensional concept and experience of career (Collin, 1998).

A match between individuals' preferences (e.g. for autonomy or challenge) and the extent to which those attributes are present in an occupation should lead to more positive career outcomes. However, reviews and meta-analyses indicate that the relationship between such matches and career outcomes is rather weak and inconsistent (Spokane, Meir, & Catalano, 2000). Among the reasons given for lack of consistent results, is the failure to consider fit along a number of dimensions simultaneously (Kristoff, 1996; Ostroff et al., 2002).

Ellison and Schreuder (2000) point out that there has been an increasing emphasis on the distinction between an internal and an external career. The internal career involves a subjective sense of where one is going in one's work life, as opposed to the external career, the formal stages and roles defined by organisational policies and social concepts of what an individual can expect in the organisational structure (Schein, 1996). For the individual to adjust to the changing organisation, there is a need to shift from external to internal career thinking – meaning that one needs to stop assessing one's career according to one's position or status in the organisation; instead, one should rely on a personal interpretation of cumulative work experience (Arthur, 1992). Savickas (1992) states that by viewing a career from a subjective perspective, the accuracy of predicting a match between the individual and his occupation can probably be increased.

It might be during a career crisis that the individual finds it necessary to decide what he or she really wants and how much he or she is willing to sacrifice to achieve the set goals. Dessler (1981) points out that the individual might realise that it is those aspects of his personality that are most central to his character that he would not give up if a career choice has to be made.

The research on the stages of career decision making suggests that individuals' career identities develop over time, beginning with broad explorations of talents and interests,

culminating in concrete choices about jobs and careers according to Germeijs and DeBoeck (2003). Occupational choice is a largely irreversible process inevitably involving compromise between interest, values, capacities, and opportunity (Brown & Brooks, 1990).

Gender might influence the decision-making process as a result of women's orientation to other life roles (Harpaz & Fu, 1997). Levinson (1996) found that women progress through the same age-related stages as men, but face "gender splitting". Roberts and Newton (1987) reported that while men have one, career-focused dream for their future, women tend to have split dreams. According to Murphy (2001), generations will differ in their career values based on the differences of demographics, early life experiences, heroes, music and early days in the workforce. Kram (1996) highlights that if one knew a person's age, tenure, and personality and/or learning style, one could predict that person's salient career concerns.

Feldman and Whitcomb (2005) state that the slow career starts of young adults might be due to their inability to identify early career goals. The number of criteria used might be part of the problem. Dunegan (1993) alleges that some young adults have so many criteria they want to maximise in a career that no career option seems particularly attractive. Part of the problem is that many of these will never co-occur. Another reason for the slow start might be that the young adults are confronted by change themselves. Their established ways of thinking and working may prove to be inadequate to allow them to make sense of the changes that are taking place (Collin, 1998).

There are many ways in which identity can be expressed and understood (Dorval, 1999). Josselson (1987) claims that values can be considered part of our identity, seeing as what we value forms the core of our sense of our identity. Values are conceptualised as enduring beliefs that are central to one's self-concept, and greatly influence behaviour (Feather, 1992; Rokeach, 1973).

Values are extremely influential in decision making and goal setting in various life domains (Brown, 1996; Feather, 1992; Rokeach, 1973). Super (1970) acknowledges the influence of values on goal setting and notes that they provide a sense of purpose in life. Brown's (1996) values-based holistic model of career and life role choices and satisfaction places values at the centre of the career decision-making process. Brown (1996) asserts that values are the primary, but by no means the only, basis for decision making. According to the model, each

individual develops a small number of values, which are prioritised and arranged in hierarchical order. Behaviour will be most strongly guided by the values ranked most highly. Values transcend situations and tend to be relatively stable over time (Brown, 1996; Rokeach, 1973). Values also act as standards against which one's own behaviour and the behaviour of others is judged. Brown (1996) also suggests that a matching process occurs between the values of the occupational field and the values of the individual. Work values are the values that individuals believe should be satisfied as a result of their participation in the workplace (Brown, 2002).

The individual's preferences might be determined by values, personality, environmental influences (Taris & Feij, 2001) or, according to Schneider, Goldstein, and Smith (1995), be a preference that an individual exercises to choose organisations that have characteristics similar to their own. For example, an employee will only be satisfied when the amount of supervision supplied matches the amount of supervision desired; excess support as well as lack of support will lead to job dissatisfaction (Taris & Feij, 2001). These so-called U-shaped relations are expected for certain environmental features such as task variety and autonomy. However, when other environmental features are considered – such as physical security and valued social position – work outcomes are unlikely to be affected by having too much physical security or value (Locke, 1976; Mahoney, 1979; Warr, 1987). Brown (1996) suggests that people's work values are a component of their life values, which are constructed throughout the developmental years through the interaction of their genetic template and their varied, complex life experiences.

## **Values**

A value can be defined as a deeply entrenched belief that influences cognitions and emotions, and that guides behaviour (Brown, 1996; Feather, 1992; Rokeach, 1973). Values are not descriptive or evaluative beliefs, but prescriptive beliefs that are organised according to their relevance and that guide us in our decisions. The most important among them form the core of one's personality and the ground for one's self-concept (Rokeach, 1973).

Values give meaning to life and are important parts of creating an identity (Shaffer, 1978). Nevill and Kruse (1996) indicate that if an individual's values cannot be satisfied through a particular role, the employee will consider through which other life roles his/her values can

be satisfied to ensure career satisfaction. Although values have been the subject of extensive research for many years, there is little consensus on any one description of the construct (Macnab, Bakker, & Fitzsimmons, 2005).

Super (1970) offers a simple definition of values as traits, values, and interests derived from needs. The need leads to action, and action leads to modes of behaviour or traits that seek objectives formulated in generic terms (values) or in specific terms (interests). Traits are ways (styles) of acting to meet a need in a given situation. Values are objectives that one seeks to attain to satisfy a need. Interests are the specific activities and objects through which values can be obtained and met. Locke (1976) found that values are subjective or something a person desires at either a conscious or subconscious level – a notion supported by Edwards and Parry (1993). Locke and Henne (1986) believe that values are rooted in needs and provide a principal basis for goals. This leads to Latham and Pinder (2005) stating that values are a step closer to action than needs. Schwartz (1994) points out that values serve as guiding principles in the life of a person. Three sets of values were identified by Prilleltensky (2000), namely values for personal wellness, values for collective wellness, and values for relational wellness to assist in guiding individual and organisational behaviour.

Research shows that values are crucial for the individual's functioning (Ball-Rokeach, Rokeach & Grube, 1984; Feather, 1975; Scheibe, 1970). Events, which include the work environment and stimuli, are constantly measured against the value system of the individual, which determines the individual's motivation and behaviour (Du Toit, 1994). Values are beliefs that are experienced by the individual as standards that guide how he or she should function. They are cognitive structures, according to Rokeach (1973), but they also have behavioural and affective dimensions. Values play a crucial role in personal and social life, as well as a role in work life. Values develop so that individuals can meet their needs in socially acceptable ways (Rokeach, 1973).

Senge (1990) is of the opinion that value actualisation over the long term might result in economic success, while Du Toit (1994) indicates that clearly defined values will lead to commitment in the organisation's focus areas. Values play a significant role in career choices and satisfaction (Dorval, 1999) and are more fundamental than interests. Therefore it is helpful to ascertain what it is that an individual wants to get out of life in pursuing the question of the field or activity in which to seek it (Macnab et al., 2005).

Research done by Bennett, Stadt, and Karmos (1997) compared gender trends for work values and came up with the following results: female value preferences moved toward altruism and variety, and away from autonomy and advancement. Male values preferences remained relatively constant, except for a significant drop in aesthetics. Shared values were economic security, achievement, and ability utilisation (Bennett et al., 1997).

### **Career anchors**

Another influencing factor in an individual's career is his or her career anchor. A person's career anchor refers to his or her self-concept, consisting of self-perceived talents and abilities, basic values and the developed sense of motives and needs applicable to the individual's career. Once the self-concept is formed, it serves as a stabilising force, an anchor, which can be regarded as values that a person would not give up if he or she were forced to choose (Schein, 1996). Different people have different career anchors, which have different consequences in terms of the way a person manages his or her career. Longitudinal research by Schein (1990) indicates that career anchors have the following dominant themes and definitions:

*Technical or functional competence* can be defined as career anchor when some people find that exercising their talents and the satisfaction of knowing that they are experts motivate them. These people commit themselves to a life of specialisation if the work remains challenging. *General managerial competence* can be described as the career anchor when people discover, as their careers progress, that they have the range of competence that is required to be a general manager, and that they have the ambition to be responsible for making major decisions. Advancement in the corporate ladder, opportunities for leadership, and contributions to the success of their organisations motivate these individuals. They also have the ability to influence, supervise, lead, handle, and control people at all levels towards goal achievement. *Autonomy or independence* as career anchor finds rules, procedures, working hours, etc. restrictive to people as they need to do things in their own way, at their own pace, and against their own standards. They pursue more independent careers and are unlikely to find happiness within structured organisations. *Security or stability* is the career anchor for some people who need to organise their careers so that they feel safe and secure, that future events are predictable, and that they have job tenure. These people are willing to give responsibility for their career management to their employers as the opposite of the

group who embrace autonomy. *Entrepreneurial creativity* can be defined as career anchor by creating business or developing new products as characteristics of people with this career anchor. Entrepreneurially-anchored people typically begin their dreams relentlessly early in life by starting small money-making enterprises even during high school. What distinguishes entrepreneur-anchor individuals from autonomy-anchored people is the obsession to prove that they can create business. *Service or dedication to a cause* is the career anchor when career decisions are based on the desire to improve the world. This might be indicative of service or dedication to a cause as the career anchor. It entails being oriented more toward values than the actual talents or areas of competence involved. *Pure challenge* is described by some people who anchor their careers in the perception that they can conquer anything or anybody. Solving unsolvable problems, overcoming impossible obstacles and as these are conquered, they seek ever-tougher challenges. *Lifestyle* as career anchor means that some people organise their existence around lifestyle. Lifestyle-anchored people are highly motivated toward meaningful careers, with the condition that the career must be integrated with total lifestyle, and caters for the needs of the individual, the family, and the career.

According to Schein (1978), individuals will obtain more self-knowledge as they advance in their career life, and will therefore gain more clarity regarding their career self-concepts. Greenhaus (1987) is of the opinion that career anchors are decisive when a career decision has to be made, but that they provide no guarantee that a person will experience career satisfaction. Without knowledge of his or her career anchor, a person could land up in a working situation that is not satisfactory and might feel that “this is not really me”. A career anchor therefore provides the basis for career choices (Schein, 1985). An individual’s career anchor is a composite of his or her career orientation and self-perceived talents (DeLong, 1982). Employees’ career anchors would play a role in their decision-making about what they want from their jobs and the organisation which employs them (Schein, 1990). Furthermore, the above-mentioned career anchors are related to personality characteristics of employees (Van Rensburg, 2001). Schein (1990) also highlights that many career situations make it possible to fulfil several sets of talents, motives, and values, making a choice unnecessary.

The dominant trend of a person’s needs, values, attitudes, and abilities becomes increasingly fixed over time and eventually guides life and career decisions (Derr, 1980). Schein (1978) indicates that this stabilising tendency is integral to the career anchor concept, namely “to identify a growing area of stability within the person”. Feldman (1989) claims that career

anchors can be pulled up and changed, but dramatic changes will require great effort and are not likely to occur very frequently.

Tokar, Fischer, and Subich (1998) found that personality is a significant predictor of career choices, other career-relevant individual difference variables (work values) and aspects of career adjustment (performance and stress). According to Warr and Pearce (2004), people prefer career anchors and organisational cultures that match their personality attributes.

A poor fit between the individual's career and working life may predict lower involvement in the job, and vice versa (Boshoff, Bennett, & Kellerman, 1994) which emphasises the importance of making the correct decision on careers. The theoretical considerations presented make it possible to postulate that values and career anchors can influence well-being in the chemical industry as they determine the occupation chosen. This leads the researcher to believe that career anchors and values are closely related in the understanding of well-being.

### **Aims and hypotheses**

The first objective of the study was to determine the structure of values and career anchors as measured by the Values Scale and the Career Orientation Inventory and to determine the reliability of the identified factors. The second objective was to investigate the relationship between values, career anchors, and demographic variables such as age, education, gender, home language, years of service, and job level.

The hypotheses of this study are as follows:

H1: The Values Scale and Career Orientation Inventory will have overlapping factors, as both instruments measure values.

H2: No significant differences will exist between the values and career anchors of various demographic groups.

## **METHOD**

### **Research design**

A survey design was used to reach the research objectives. The specific design was the cross-sectional design, where a sample is drawn from a population at a particular point in time (Shaughnessy & Zechmeister, 1997).

### **Participants**

Surveys were distributed to 501 randomly selected employees in Sasolburg, Secunda and Rosebank. A total of 501 completed questionnaires were returned. Only 490 of the questionnaires were used for data analysis, with 11 not useable on account of missing data. This represented a participation rate of 97,8%.

Table 1 gives a summary of the participants regarding age, education, gender, home language, years of service, and job level.

Table 1

*Characteristics of the Participants (N=490)*

Item	Category	Frequency	Percentage
Age	< 30	77	15,4
	30 – 39	147	29,2
	40 – 49	182	36,2
	> 50	91	18,2
	Missing	5	1
Education	Grade 12 or lower	256	51
	Diploma	135	26,9
	4-year degree or honours	70	14
	Postgraduate degree	23	4,6
	Missing	18	3,6
Gender	Male	336	66,9
	Female	150	29,9
	Missing	16	3,2
Home language	Afrikaans/English	364	72,5
	African	126	25,1
	Missing	12	2,4
Years of service	< 5	118	23,5
	5 – 14	135	26,9
	15 – 24	179	35,6
	>25	59	11,8
	Missing	11	2,2
Job level	Employees (<L7)	218	43,4
	Supervisor (L7-L6C)	180	35,9
	Middle Managers (L5B-L5A)	40	8
	Senior Managers (L4-L3)	13	2,6
	Missing	40	8

According to Table 1, 36,2% of the respondents were between the ages of 40 and 49 years. The gender distribution (more than two thirds males) compared well with the demographics of the company. Just over half of the participants (51%) held a grade twelve qualification or less, which might explain the lack of formal qualifications and the large percentage of people in lower than Level 7 positions (43,4%). The language representation of the sample also corresponded well with the demographics of the area – with 72,5% reporting either Afrikaans or English as their home language, and only 25,1% of the respondents reporting Sesotho,

isiXhosa, isiZulu or another African language as their first language. Possible reasons for missing data might be that individuals feared being identified or did not understand the questions.

### **Measuring battery**

The *Values Scale (VS)*, a 110 item instrument measuring 22 different values, 5 items for each value, was designed by Super and Nevill (1985) in co-operation with The Work Importance Study which is formed by a consortium of psychologists over 13 continents (Nevill & Kruse, 1996). The Values Scale measures the needs that an individual has regarding the hopes to live out his life roles. Secondly, the importance of a work role contributes to work satisfaction (Super & Sverko, 1990). The 22 values measured by the Values Scale are ability utilisation, achievement, advancement, aesthetics, altruism, authority, autonomy, creativity, cultural identity, economic rewards, economic security, own lifestyle, personal development, physical activities, physical strength, prestige, risk, social interaction, social relation, spirituality, variety, and pleasant working conditions. This four-point scale ranges from 1 (*little or no importance*) to 4 (*very important*). Consistencies range between 0,68 and 0,80 (Super & Sverko, 1990). Two measures of reliability were computed: firstly, for internal consistency for high school, university, and other adult samples, and secondly, for stability for university students. The alpha coefficient were generally above 0,65 for three samples and the test-retest values were around 0,86 (Nevill & Super, 1989).

The *Career Orientation Inventory (COI)* (Schein, 1985) consists of 41 items which measure by using a six-point scale. Respondents evaluate themselves on the six-point scale, ranging from 1 (*not important at all*) to 6 (*of the utmost importance*). Nine career orientations are measured by the COI, being geographical security, job security, autonomy and independence, entrepreneurship, technical/functional competence, managerial competence, service dedication, pure challenge, and lifestyle integration (Boshoff et al., 1994). Kaplan (1990) as well as Kaplan, Boshoff, and Kellerman (1991) found Cronbach alpha coefficients of 0,70 and higher for the COI, except for Challenge, which showed an alpha coefficient of 0,45. The test-retest reliabilities of the COI vary from 0,71 to 0,91 (DeLong, 1982). With regard to construct validity, it was found that about 90% of the items of the COI loaded on the correct constructs (Kaplan, 1990). Slabbert (1987) confirmed the construct validity of the COI for South African managers.

## **Statistical analysis**

The statistical analysis was carried out on the SPSS Program (SPSS Inc., 2003) and the Amos Program (Arbuckle, 1999). Exploratory factor analyses and Cronbach alpha coefficients were computed to assess the reliability of the constructs which were measured in the study. To prepare the data, exploratory factor analyses were carried out on the scales of the Values Scale and the Career Orientation Inventory using the SPSS Program (SPSS Inc., 2003). Descriptive statistics were used to analyse the data.

Exploratory factor analyses were carried out to determine the construct validity of the measuring instruments. Firstly, a simple principal components analysis was conducted on both the measuring instruments. The eigenvalues and scree plots were studied to determine the number of factors. Secondly, a principal axis factor analysis with a direct oblimin rotation was conducted to determine if the factors were related, and a principal axis factor analysis with a varimax rotation was used to extract the factors if factors were not significantly related (Tabachnick & Fidell, 2001).

Pearson product-moment correlation coefficients were used to specify the relationship between the different variables. A cut-off point of  $p = 0,05$  was set for the statistical significance of the results. Effect sizes (Cohen, 1988; Steyn, 1999) were used in addition to statistical significance to determine the practical significance of relationships. Effect sizes indicate whether obtained results are important, while statistical significance may often show results which are of little practical relevance (Steyn, 1999). A cut-off point of 0,30 (medium effect)(Cohen, 1988) was set for the practical significance of correlation coefficients.

Multivariate analysis of variance (MANOVA) was used to determine the significance of the difference between the different components and various biographical characteristics of the sample. MANOVA tests whether mean differences among groups on a combination of dependant variables are likely to have occurred by chance (Tabachnick & Fidell, 2001). In MANOVA, a new dependant variable that maximises group differences is created from the set of dependent variables. When an effect was significant in MANOVA, one-way analysis of variance (ANOVA) was used to discover which dependent variables were affected. Because

multiple ANOVAs were used, a Bonferroni-type adjustment was made for inflated Type 1 error.

## RESULTS

### **Construct validity of the measuring instruments**

SPSS (SPSS Inc., 2003) was used to test exploratory factor analyses on the dimensions of the Values Scale and the Career Orientation Inventory. Firstly, a simple principal components analysis was conducted on the Values Scale and the Career Orientation Inventory. The eigenvalues and scree plots were studied to determine the number of factors. Secondly, a principal axis factor analysis with a direct oblimin rotation was conducted to determine if the factors were related, and a principal axis factor analysis with a varimax rotation was used to extract the factors (Tabachnick & Fidell, 2001).

The scree plot for the Values Scale suggested the extraction of eight factors (which explained 47,92% of the total variance). The factors for the Values Scale included Factor 1 as Improvement of the Self and Others, indicating the individual's value to develop himself and accomplish achievements by utilising his own abilities, with the alpha for this factor being 0,93. The second factor could be called Physical Activity and Risk as the individual values physical strength and activities as well as risk, with an alpha of 0,90. The third factor is Autonomy, and is indicated by autonomy and own lifestyle values; the alpha was 0,83. The fourth factor is Social Relations, and could be described as the social interaction and relations the individual has, and the alpha was 0,85. Prestige is the fifth factor, indicating that prestige, achievement, authority and advancement are valued, with the alpha being 0,85. As the sixth self-explanatory factor, Economic Rewards and Security's alpha was 0,88. Factor seven could be called Aesthetics as it describes having pleasant working conditions and aesthetics as values, and the alpha was 0,83. The last factor is connected to Cultural Connectedness and the alpha came out as 0,78; this value could be described by evaluating cultural identity, spirituality and social relations as values.

The scree plot for the Career Orientation Inventory suggested the extraction of six factors (which explained 50,52% of the total variance). The factor patterns suggested that Factor 1 should be Challenge and is a combination of the original entrepreneurial creativity and pure

challenge career anchors, with an alpha of 0,75. The second factor is called Influence, and has an alpha of 0,78. Factor 3 is Security and is made up of a combination of security or stability and technical or functional competence; the alpha being 0,76. Service is the fourth factor, with an alpha of 0,76 and Autonomy the fifth factor, with an alpha of 0,71. Factor 6 is Management, which is made up of general managerial competence, but within the correct context; alpha being 0,79.

Table 2 shows the factor analyses for the Values Scale. Loadings of the variables on factors are shown.

Table 2  
*Factor Analyses for Values Scale*

			Factor								
			1	2	3	4	5	6	7	8	9
67	Make the best use of my strong points	Ability utilisation	<b>0,64</b>	0,00	0,15	0,07	0,07	0,14	0,11	0,07	-0,07
13	Develop as a person	Personal development	<b>0,63</b>	-0,08	0,20	0,15	0,04	0,11	0,01	0,03	0,02
91	Know I am on my way to better things	Advancement	<b>0,63</b>	0,10	0,12	0,04	0,21	0,20	0,24	-0,01	-0,10
101	Experience personal growth through the things I do	Personal development	<b>0,62</b>	-0,02	0,25	0,04	0,09	0,14	0,19	0,04	-0,09
79	Become the person I want to be	Personal development	<b>0,62</b>	0,08	0,29	0,11	-0,03	0,16	0,08	0,02	-0,05
46	Reach a high standard in my work	Achievement	<b>0,60</b>	0,03	0,11	0,08	0,06	0,21	0,08	0,08	0,02
23	Do work that makes use of what I can do well (my abilities)	Ability utilisation	<b>0,60</b>	-0,06	0,07	0,16	0,11	0,16	0,03	0,06	-0,01
68	Have a feeling of having really done something	Achievement	<b>0,60</b>	0,04	0,19	0,02	0,25	0,08	0,15	-0,02	-0,07
45	Develop what I can do well (my abilities)	Ability utilisation	<b>0,60</b>	-0,06	0,17	0,07	0,10	0,19	0,10	0,10	-0,07
1	Use all my skills and knowledge	Ability utilisation	<b>0,59</b>	0,02	0,02	0,08	0,11	0,02	-0,13	0,04	0,18
90	See the results of my efforts	Achievement	<b>0,58</b>	0,14	0,10	0,05	0,13	0,21	0,07	0,00	-0,13
3	Get ahead in my job	Advancement	<b>0,57</b>	0,00	0,09	0,03	0,25	0,12	-0,11	0,14	0,17
2	Have results which will show that I have done well	Achievement	<b>0,55</b>	-0,11	0,11	0,00	0,18	0,09	-0,03	0,11	0,11
5	Help people with problems	Altruism	<b>0,53</b>	0,13	-0,10	0,31	0,03	0,02	-0,07	0,08	0,32
71	Be a person who helps others in need of assistance	Altruism	<b>0,52</b>	0,25	-0,09	0,32	0,00	0,05	0,13	0,10	0,22
26	Find pleasure in the beauty of my work	Aesthetics	<b>0,52</b>	0,08	0,16	0,17	0,19	0,15	0,23	0,17	0,20
57	Find personal satisfaction in my work	Personal development	<b>0,51</b>	-0,02	0,24	-0,01	0,15	0,12	0,07	0,01	-0,04
48	Work in a way that makes the world a better place	Aesthetics	<b>0,50</b>	0,16	-0,02	0,23	0,02	0,09	0,27	0,12	0,28
35	Have ideas about what to do with my life	Personal development	<b>0,50</b>	0,04	0,22	0,06	-0,05	0,41	0,16	0,04	0,08
4	Make life more beautiful	Aesthetics	<b>0,49</b>	0,00	0,04	0,07	0,04	0,14	0,18	0,12	0,24
27	Be involved in work (in which the goal is)	Altruism	<b>0,47</b>	0,21	-0,03	0,37	0,02	0,04	0,06	0,03	0,33

86	which the goal is) helping people Be able to contribute to the improvement of society	Spirituality	<b>0,45</b>	0,16	0,04	0,41	0,06	0,00	0,25	0,11	0,22
100	Develop my own lifestyle	Own lifestyle	0,44	0,06	0,30	0,08	0,04	0,33	0,23	0,05	-0,01
20	Help to make the world a better place	Spirituality	0,43	0,15	-0,05	0,38	0,00	0,02	0,16	0,16	0,29
89	Do something I know I can do well	Ability utilisation	0,43	0,07	0,09	0,11	0,13	0,18	0,21	0,06	-0,30
43	Do a number of different things during the day	Variety	0,37	0,11	0,29	0,24	0,17	-0,08	0,09	0,26	0,01
22	Have enough work space and light to work in	Pleasant working conditions	0,35	0,09	0,05	0,18	-0,01	0,27	0,25	0,13	0,05
93	Help others, even if it means giving up some of my own comforts	Altruism	0,35	0,26	0,07	0,29	-0,02	-0,03	0,19	0,09	0,14
108	Use my talents in the service of a Supreme Being	Spirituality	0,35	0,13	0,13	0,19	0,07	-0,05	0,22	0,23	0,04
21	Have every day be different in some way from the one before	Variety	0,32	0,22	0,23	0,26	0,09	-0,04	0,08	0,04	0,15
77	Know that an occasional setback will not really affect my income	Economic security	0,24	0,01	0,15	0,01	0,08	0,21	0,11	0,06	-0,16
103	Be relied upon when physical strength is essential	Physical strength	-0,08	<b>0,77</b>	0,01	0,15	0,09	0,07	0,09	0,07	-0,01
59	Use my physical strength	Physical strength	-0,02	<b>0,75</b>	0,01	0,03	0,08	0,00	0,07	0,17	0,04
102	Do things that require physical fitness	Physical activities	-0,04	<b>0,74</b>	0,05	0,11	0,06	0,01	0,07	0,07	-0,07
81	Be respected for my physical strength	Physical strength	-0,06	<b>0,70</b>	0,08	0,10	0,15	0,11	0,18	0,09	-0,07
58	Be physically active in my work	Physical activity	0,21	<b>0,68</b>	-0,03	0,09	0,05	0,05	0,11	0,10	0,12
37	Handle power machines	Physical strength	-0,11	<b>0,59</b>	0,12	0,05	0,11	0,08	-0,05	0,11	0,13
39	Feel that there is some risk or some danger in the work I do	Risk	-0,02	<b>0,58</b>	0,04	0,09	0,20	0,03	-0,02	0,04	0,16
83	Feel the thrill (exciting feeling) of danger	Risk	-0,04	<b>0,57</b>	0,24	0,10	0,18	-0,04	0,05	0,03	-0,06
15	Work hard physically	Physical strength	0,16	<b>0,53</b>	0,06	0,11	-0,02	0,05	0,03	0,23	0,02
80	Be physically fit	Physical activity	0,32	<b>0,52</b>	0,05	0,19	-0,08	0,16	0,12	0,01	-0,07
14	Get a lot of physical exercise	Physical activity	0,32	<b>0,51</b>	0,09	0,26	-0,07	0,10	0,04	0,11	0,04
61	Take on dangerous tasks if they interest me	Risk	0,01	<b>0,51</b>	0,36	0,03	0,15	-0,12	-0,02	0,10	-0,02
36	Take part in sport and other physical activities	Physical activity	0,27	<b>0,46</b>	0,07	0,30	-0,03	0,08	0,06	0,04	0,07
105	Be able to make plans or decisions that involve some risk	Risk	0,06	0,42	0,39	0,11	0,23	-0,01	-0,05	0,05	-0,01
109	Be able to visit different places as part of my job	Variety	0,04	0,37	0,28	0,27	0,10	0,00	0,20	-0,11	0,19
94	Have other people know that my instruction are to be followed	Authority	-0,08	0,36	0,23	0,09	0,35	0,18	0,10	0,02	0,08
29	Make my own decisions at work	Autonomy	0,27	0,05	<b>0,58</b>	0,01	0,15	0,09	-0,08	0,08	0,13
56	Work at what I want to when I want to	Own lifestyle	0,07	0,04	<b>0,57</b>	0,02	0,13	0,10	0,24	0,09	-0,05
12	Live according to my own ideas	Own lifestyle	0,22	-0,05	<b>0,56</b>	0,03	0,01	0,28	-0,08	0,13	0,00
95	Set my own working hours	Autonomy	0,02	0,03	<b>0,54</b>	0,04	0,15	-0,07	0,25	-0,01	-0,07
51	Be free to get on with a job in my own way	Autonomy	0,21	0,11	<b>0,53</b>	0,01	0,11	0,17	0,05	0,09	0,06
73	Be my own boss	Autonomy	0,11	0,12	<b>0,52</b>	0,04	0,12	0,14	0,07	-0,06	0,12

78	Do my work at my own pace (tempo)	Own lifestyle	0,11	0,08	<b>0,50</b>	-0,02	0,09	0,07	0,10	0,07	-0,18
7	Act in my own way	Autonomy	0,26	0,12	<b>0,49</b>	-0,06	0,01	0,05	-0,10	0,15	0,09
34	Live my life my way	Own lifestyle	0,23	0,04	<b>0,46</b>	-0,03	-0,09	0,40	-0,02	0,09	0,00
52	Have a chance to try out new ideas at work	Creativity	0,39	0,23	0,42	0,08	0,16	0,12	-0,05	0,05	0,27
65	Change work activities frequently	Variety	0,17	0,17	0,41	0,22	0,10	-0,09	0,17	0,03	0,01
96	Think up new things to make or do	Creativity	0,28	0,28	0,38	0,12	0,21	-0,05	0,20	0,00	0,25
74	Make something different to anything made before	Creativity	0,14	0,26	0,36	0,08	0,29	-0,01	0,19	0,07	0,29
17	Do risky things	Risk	0,15	0,28	0,36	0,14	0,18	-0,16	-0,03	0,06	-0,08
87	Travel as part of my work	Variety	0,09	0,28	0,35	0,28	0,10	-0,03	0,19	-0,14	0,16
106	Make contact with people	Social interaction	0,19	0,17	0,05	<b>0,74</b>	0,08	0,07	0,12	0,07	0,05
84	Talk to people	Social interaction	0,29	0,10	-0,02	<b>0,65</b>	0,11	0,06	0,06	-0,01	0,07
18	Do things together with other people	Social interaction	0,21	0,26	0,01	<b>0,63</b>	0,14	0,09	-0,06	0,04	0,17
62	Be with other people while I work	Social interaction	0,01	0,21	0,09	<b>0,59</b>	0,20	-0,09	0,15	0,12	-0,10
40	Work in a group rather than by myself	Social interaction	-0,01	0,26	0,02	<b>0,58</b>	0,20	0,03	0,06	0,04	0,04
19	Be with friends	Social relations	0,16	0,09	0,12	<b>0,55</b>	0,05	0,15	0,01	0,23	-0,08
85	Have a job where I can easily make friends	Social relations	0,11	0,22	0,08	<b>0,49</b>	0,10	0,10	0,29	0,15	-0,13
107	Be in touch with other people that I like	Social relations	0,12	0,03	0,20	0,43	0,09	0,12	0,21	0,32	-0,24
104	Have people recognise the work I have done	Prestige	0,28	0,10	0,17	0,12	<b>0,59</b>	0,03	0,16	0,11	-0,21
38	Be recognised for my accomplishments (success)	Prestige	0,36	0,09	0,10	0,14	<b>0,58</b>	0,18	0,15	0,05	0,07
16	Be admired for my knowledge and skills	Prestige	0,35	0,17	0,10	0,05	<b>0,57</b>	0,14	0,09	0,14	0,07
60	Be held in high esteem (respect)	Prestige	0,24	0,13	0,19	0,09	<b>0,55</b>	0,04	0,15	0,14	-0,08
24	Know that my efforts will be noticed	Achievement	0,42	0,06	0,14	0,07	<b>0,51</b>	0,21	0,02	0,14	-0,03
50	Be the one who manages things at work	Authority	0,05	0,31	0,24	0,19	<b>0,48</b>	0,17	0,02	-0,06	0,22
25	Get ahead quickly in my career	Advancement	0,39	0,20	0,19	0,10	<b>0,45</b>	0,23	0,04	0,07	0,07
28	Be a leader at work	Authority	0,15	0,22	0,19	0,26	0,44	0,21	-0,05	-0,07	0,23
72	Make decisions that others follow	Authority	0,14	0,25	0,23	0,21	0,44	0,14	0,10	-0,02	0,14
69	Be able to think in terms of advancement (promotion)	Advancement	0,38	0,12	0,15	0,01	0,40	0,29	0,14	-0,01	-0,01
82	Be seen as a special person	Prestige	0,17	0,15	0,17	0,23	0,39	0,05	0,36	0,15	-0,14
6	Tell others what to do	Authority	-0,04	0,30	0,15	0,16	0,38	0,08	-0,05	0,00	0,20
32	Have a good income	Economic rewards	0,37	0,10	0,08	0,00	0,20	<b>0,65</b>	0,02	0,03	0,06
54	Be well paid for whatever work I may do	Economic rewards	0,36	0,06	0,13	0,03	0,14	<b>0,55</b>	0,09	0,07	0,01
33	Know that I can always make a living	Economic security	0,49	0,01	0,12	0,06	0,11	<b>0,53</b>	0,05	0,05	0,02
55	Have a secure future	Economic security	0,39	0,07	-0,07	0,15	0,09	<b>0,50</b>	0,05	0,19	0,04
98	Make money	Economic rewards	0,23	0,09	0,15	0,04	0,18	<b>0,49</b>	0,23	0,06	-0,01
99	Know I can manage financially even in hard times	Economic security	0,38	0,03	0,15	0,02	0,13	<b>0,47</b>	0,11	0,04	-0,05
76	Have good housing	Economic rewards	0,26	0,20	-0,12	0,09	0,23	<b>0,47</b>	0,20	0,12	-0,02
11	Have a feeling of economic security	Economic security	0,41	0,00	0,06	0,05	0,18	<b>0,47</b>	-0,03	0,13	0,07

10	Have a high standard of living	Economic rewards	0,26	0,02	0,21	0,12	0,23	0,35	0,03	0,16	0,00
110	Work in attractive or even beautiful surroundings	Pleasant working conditions	0,09	0,12	0,19	0,16	0,17	0,17	<b>0,61</b>	0,15	0,05
92	Be able to make my surroundings more beautiful	Aesthetics	0,28	0,22	0,07	0,08	0,07	0,13	<b>0,61</b>	0,21	0,10
47	Be concerned (busy) with beautiful things in my work	Advancement	0,36	0,11	0,06	0,18	0,04	0,10	<b>0,56</b>	0,23	0,10
70	Be surrounded by beauty	Aesthetics	0,20	0,06	0,27	0,09	0,07	0,04	<b>0,56</b>	0,24	-0,04
88	Work in a building in which a comfortable temperature is maintained	Pleasant working conditions	0,09	0,06	0,09	0,14	0,33	0,19	0,41	0,11	-0,21
64	Further welfare and peace in this world	Spirituality	0,34	0,16	0,01	0,26	-0,02	0,11	0,34	0,25	0,22
66	Be protected from the weather while I work	Pleasant working conditions	0,13	0,02	0,00	0,13	0,15	0,21	0,31	0,23	-0,07
9	Live where people of my religion and cultural group are also accepted	Cultural identity	0,04	0,18	0,03	-0,02	-0,02	0,13	0,04	<b>0,66</b>	0,05
31	Work where people of my cultural background also have good job possibilities	Cultural identity	0,11	0,17	0,10	0,05	0,08	0,13	0,15	<b>0,59</b>	0,05
75	Feel accepted by members of my own language group	Cultural identity	0,03	0,23	0,12	0,08	0,24	0,14	0,21	<b>0,54</b>	-0,13
53	Feel that I as well as other members of my cultural group are accepted at work	Cultural identity	0,23	0,20	0,11	0,07	0,10	0,18	0,12	<b>0,52</b>	0,09
42	To live according to religious principles	Spirituality	0,16	0,02	-0,02	0,12	-0,01	-0,08	0,07	<b>0,51</b>	0,02
63	Be with my kind of people	Social relations	-0,10	0,21	0,27	0,23	0,02	0,02	0,11	<b>0,47</b>	-0,24
97	Fit in while being true to my cultural values	Cultural identity	0,19	0,11	0,18	0,18	0,13	0,10	0,24	0,42	0,01
44	Have good sanitary facilities (e.g. a cloakroom) at work	Pleasant working conditions	0,25	0,06	0,01	0,09	-0,01	0,23	0,12	0,25	-0,11
8	Discover, develop (start) or design new things	Creativity	0,28	0,26	0,31	0,09	0,12	0,03	0,06	-0,01	0,51
30	Create something new in my work	Creativity	0,34	0,20	0,30	0,11	0,22	0,10	0,06	0,01	0,46
41	Do things with people I like	Social relations	0,06	-0,01	0,30	0,29	0,05	0,13	0,15	0,26	-0,32

Only values larger than 0,45 were considered to be significant for this factor analysis. The eight factors could be identified by the following categories: The factors for the Values Scale included Factor 1 as *Improvement of the Self and Others*; this factor consisted of ability utilisation, personal development, advancement, achievement, altruism, aesthetics, and spirituality. The second factor could be called *Physical Activity and Risk* and consists of physical strength, physical activities, and risk. The third factor is *Autonomy*, and is made up of autonomy and own lifestyle as values. The fourth factor is *Social Relations*, and consists of social interaction and social relations. *Prestige* is the fifth factor, and has prestige, achievement, authority, and advancement as values. As the sixth factor, *Economic Rewards and Security* is made up of economic rewards and economic security. Factor seven could be

called *Aesthetics*, as it consists of pleasant working conditions, aesthetics, and advancement. The last factor is made up of cultural identity, spirituality, and social relations, and is called *Cultural Connectedness*.

Table 3 shows the factor analyses for the Career Orientation Inventory. Loadings of the variables on factors are shown.

Table 3  
*Factor Structure for the Career Orientation Inventory*

	Item	Name	Factor					
			1	2	3	4	5	6
39	I have been motivated throughout my career by using my talents in a variety of different areas of work	Entrepreneurial creativity	<b>0,65</b>	0,18	0,05	0,08	0,02	-0,03
31	An endless variety of challenges is what I really want from my career	Pure challenge	<b>0,61</b>	0,04	-0,07	0,08	0,24	0,07
24	I have been motivated throughout my career by the number of ideas of products with which I have been directly involved in creating	Entrepreneurial creativity	<b>0,61</b>	0,08	0,05	-0,06	0,02	0,02
21	Being able to use my skills and talents in the service of an important cause	Service or dedication to a cause	<b>0,57</b>	0,08	-0,02	0,11	0,09	0,26
29	I have always sought a career in which I could be of service to others	Service or dedication to a cause	<b>0,56</b>	0,02	0,05	0,18	0,05	0,20
26	I would like to reach a level of responsibility in an organisation where my decisions really make a difference	General managerial competence	<b>0,56</b>	0,17	-0,08	0,11	0,26	0,23
32	Entrepreneurial activities are an important part of my career	Entrepreneurial creativity	<b>0,55</b>	0,26	-0,02	-0,03	0,28	-0,01
23	The excitement of participating in many areas of work has been the underlying motivation of my career	Entrepreneurial creativity	<b>0,54</b>	0,02	0,01	0,03	0,07	0,04
15	A career which provides a maximum variety of types of assignments and work projects	Pure challenge	<b>0,52</b>	0,24	-0,08	-0,04	0,23	0,14
16	The use of my skills in building a new business enterprise	Entrepreneurial creativity	<b>0,52</b>	0,26	-0,07	-0,01	0,21	0,27
7	An endless variety of challenges in my career	Pure challenge	<b>0,49</b>	0,02	0,06	0,10	0,14	0,30
37	I want a career in which I can be committed and devoted to an important cause	Service or dedication to a cause	<b>0,47</b>	0,12	0,02	0,39	0,11	0,08
13	The process of seeing others change because of my efforts	General managerial competence	<b>0,43</b>	0,10	-0,04	0,27	0,17	0,37
38	I want others to identify me by the organisation and my job	Status	0,05	<b>0,66</b>	0,13	0,33	0,05	-0,19

	title							
14	To be recognised by my title and status	Status	0,05	<b>0,66</b>	0,12	0,10	0,13	0,04
10	To be in a position of leadership and influence	General managerial competence	0,23	<b>0,58</b>	-0,04	0,03	0,18	0,35
18	To rise to a position in general management	General managerial competence	0,16	<b>0,54</b>	-0,15	0,04	0,23	0,26
22	Being identified with a powerful or prestigious employer	General managerial competence	0,17	<b>0,53</b>	0,11	0,23	-0,03	0,17
30	I like to be identified with a particular organisation and the prestige that accompanies that organisation	Status	0,26	<b>0,50</b>	0,21	0,31	0,01	-0,01
34	I want to achieve a position which gives me the opportunity to combine analytical competence with supervision of people	General managerial competence	0,39	<b>0,41</b>	-0,09	-0,01	0,19	0,26
28	It is important for me to remain in my present geographical location rather than to move because of promotion or new job assignment	Security or stability	0,01	-0,06	<b>0,74</b>	0,06	0,00	-0,03
41	I prefer to work for an organisation which will permit me to remain in one geographical area	Security or stability	-0,07	0,02	<b>0,70</b>	0,16	-0,05	-0,06
20	Remaining in one geographical area rather than being promoted into moving because of a promotion	Security or stability	-0,01	-0,01	<b>0,67</b>	0,05	0,01	0,02
17	Remaining in my area of expertise rather than being promoted into general management	Technical or functional competence	-0,06	0,05	<b>0,57</b>	0,08	0,13	0,02
33	I would leave my company rather than be promoted out of my area of expertise	Technical or functional competence	0,01	0,11	<b>0,46</b>	-0,16	0,10	-0,06
9	Remaining in my specialised area as opposed to being promoted out of my area of expertise	Technical or functional competence	-0,02	0,25	<b>0,41</b>	0,08	0,06	0,16
25	I will accept a management position only if it is in my area of expertise	Technical or functional competence	0,22	0,05	<b>0,36</b>	0,11	0,09	0,04
12	An organisation which will give me long-run stability	Security or stability	0,14	0,16	0,08	<b>0,72</b>	-0,04	0,17
36	I prefer to work for an organisation which provides tenure (life-time employment)	Security or stability	0,10	0,29	0,19	<b>0,69</b>	-0,08	-0,11
4	An organisation which will provide security through guaranteed work, benefits, good retirement programme, etc.	Security or stability	0,03	0,11	0,08	<b>0,66</b>	-0,11	0,21
11	A career which is free from organisation restrictions	Autonomy or independence	0,01	0,10	0,02	-0,01	<b>0,66</b>	0,13
19	A career which permits a maximum of freedom and autonomy to choose my own work, hours, etc.	Autonomy or independence	0,20	0,03	0,04	-0,05	<b>0,63</b>	0,11

35	I do not want to be constrained by either an organisation or the business world	Autonomy or independence	0,16	0,02	0,13	-0,02	<b>0,53</b>	-0,12
3	The chance to pursue my own lifestyle and not to be constrained by the rules of an organisation	Autonomy or independence	0,18	0,07	0,10	-0,02	<b>0,51</b>	0,13
27	During my career I have been mainly concerned with my own sense of freedom and autonomy	Autonomy or independence	0,11	0,28	0,19	-0,02	<b>0,42</b>	-0,16
40	I have always wanted to start and build up a business of my own	Entrepreneurial creativity	0,25	0,14	-0,04	-0,18	<b>0,30</b>	0,06
5	The use of my interpersonal and helping skills, in the service of others	Service or dedication to a cause	0,37	-0,10	-0,04	0,34	-0,03	<b>0,44</b>
2	The process of supervising, influencing, leading and controlling people at all levels	General managerial competence	0,35	0,29	-0,02	0,11	0,02	<b>0,42</b>
1	To build my career around some specific functional or technical area	Technical or functional competence	0,30	0,13	0,11	0,10	0,11	<b>0,42</b>
6	Being identified with and gaining status from my occupation	General managerial competence	0,15	0,38	0,10	0,32	0,12	<b>0,38</b>
8	To be able to create or build something that is entirely my own product or idea	Entrepreneurial creativity	0,34	0,25	-0,02	0,08	0,33	<b>0,36</b>

A six-factor pattern is identified with the factor analyses. The factor patterns suggest that Factor 1 should be *Challenge* and is made up of entrepreneurial creativity, pure challenge, service or dedication to a cause and general managerial competence as career anchors. The second factor is called *Influence*, and consists of status and having influence as career anchor. Factor 3 is *Security*, and is made up of a combination of security or stability and technical or functional competence as career anchors. *Service* is the fourth factor, and consists of security or stability as career anchor. *Autonomy* is the fifth factor, and consists of autonomy and entrepreneurial creativity as career anchor. Factor 6 is *Management*, which is made up of managerial competence, service or dedication to a cause, technical or functional competence, and entrepreneurial creativity as career anchors.

### Descriptive statistics

Table 4 shows the descriptive statistics, Cronbach alpha coefficients and correlations of the Values Scale and the Career Orientation Inventory.

Table 4  
*Descriptive Statistics of the Measuring Instruments*

	Mean	SD	$\alpha$	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Security	3,07	0,88	0,76	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Influence	3,83	0,90	0,78	-0,00	-	-	-	-	-	-	-	-	-	-	-	-
3. Autonomy	3,29	0,88	0,71	0,18*	0,35**	-	-	-	-	-	-	-	-	-	-	-
4. Service	4,44	0,70	0,76	0,06	0,54***	0,23*	-	-	-	-	-	-	-	-	-	-
5. Management	3,52	0,93	0,79	0,24*	0,51***	0,22*	0,36**	-	-	-	-	-	-	-	-	-
6. Challenge	3,84	0,81	0,69	0,03	0,61***	0,45**	0,54***	0,33**	-	-	-	-	-	-	-	-
7. Improvement of the Self and Others	3,40	0,37	0,93	-0,01	0,26*	0,12*	0,44**	0,21*	0,28*	-	-	-	-	-	-	-
8. Physical activity and Risk	2,45	0,61	0,90	0,03	0,18*	0,05	0,07	0,33**	0,16*	0,27*	-	-	-	-	-	-
9. Autonomy	2,79	0,51	0,83	0,07	0,18*	0,29*	0,15*	0,14*	0,17*	0,46**	0,29*	-	-	-	-	-
10. Social Relations	2,79	0,57	0,85	0,05	0,20*	0,10*	0,19*	0,22*	0,19*	0,43**	0,46**	0,23*	-	-	-	-
11. Prestige	2,99	0,55	0,85	0,05	0,33**	0,16*	0,27*	0,36**	0,26*	0,59***	0,41**	0,46**	0,44**	-	-	-
12. Economic Rewards and Security	3,36	0,45	0,87	-0,01	0,23*	0,10*	0,29*	0,23*	0,19*	0,67***	0,26*	0,40**	0,29*	0,57***	-	-
13. Aesthetics	3,00	0,65	0,83	0,02	0,15*	0,14*	0,18*	0,25*	0,15*	0,52***	0,34**	0,40**	0,40**	0,43**	0,44**	-
14. Cultural Connectedness	2,87	0,58	0,78	0,13*	0,04	0,09	0,10*	0,14*	0,09*	0,33**	0,41**	0,34**	0,35**	0,34**	0,34**	0,46**

\*  $p \leq 0,05$  (statistically significant)

+  $r \geq 0,30$  (practically significant) (medium effect)

\*\*  $r \geq 0,50$  (practically significant) (large effect)

The Cronbach alpha coefficients are considered to be acceptable compared to the guideline of  $\alpha > 0,70$  (Nunnally & Bernstein, 1994). Only creativity of the career anchors scored an alpha of 0,69.

The product-moment correlations coefficients between the career anchors and the values are also reported in Table 4. As can be seen in Table 4, Influence, Improvement of the Self and Others, and Economic Rewards and Security are negatively related to Security. Autonomy (career anchor) is positively related to Influence (medium effect), while Service and Management are also positively related to Influence (large effect).

Management is positively related to Service (medium effect). Challenge is positively related to Influence and Service (large effect), and to Autonomy (career anchor) and Management (medium effect). Improvement of the Self and Others is positively related to Service (medium effect).

Physical Activity and Risk is positively related to Management (medium effect). Autonomy (value) is positively related to Improvement of the Self and Others (medium effect). Social Relations is positively related to Improvement of the Self and Others, and Physical Activity and Risk (medium effect). Prestige is positively related to Influence, Management, Physical Activity and Risk, Autonomy (value), and Social Relations (medium effect). Prestige is also positively related with large effect to Improvement of the Self and Others.

Economic Rewards and Security is positively related to Autonomy (value) (medium effect), and Improvement of Others and Self and Prestige (large effect). Autonomy (value) is positively related to Improvement of the Self and Others (medium effect). Aesthetics is positively related to Improvement of the Self and Others (large effect), and to Physical Activity and Risk, Autonomy (value), Social Relations, Prestige, and Economic Rewards and Security (medium effect). Cultural Connectedness is positively related to Improvement of the Self and Others, Physical Activity and Risk, Autonomy (value), Social Relations, Prestige, Economic Rewards and Security, and Aesthetics (medium effect).

The few correlations that were not statistically significant were the correlations with Security and Influence, Service, Challenge, Improvement of the Self and Others, Physical Activity and Risk, Autonomy, Social Relations, Prestige, Economic Rewards and Security, and Aesthetics.

Physical Activity and Risk did not correlate statistically significant with Autonomy (career anchor) and Service. Lastly, Cultural Connectedness and Influence and Autonomy (career anchor) were also not statistically significant.

Table 5 shows the relationship between the values and the categories of the employees who participated in the research by means of ANOVAs.

Table 5  
*ANOVAs – Differences in Values and the Categories*

	Age		Education		Home language	Years of service		Job level	
	<i>p</i>	$\eta^2$	<i>p</i>	$\eta^2$	<i>p</i>	<i>p</i>	$\eta^2$	<i>p</i>	$\eta^2$
Improvement of the Self and Others	0,03	0,02	0,06	0,02	0,87	0,00*	0,04	0,18	0,01
Physical Activity and Risk	0,17	0,01	0,00*	0,05	0,59	0,54	0,01	0,02	0,02
Autonomy	0,69	0,00	0,04	0,02	0,03	0,47	0,01	0,08	0,02
Social Relations	0,00*	0,03	0,26	0,01	0,18	0,20	0,01	0,51	0,01
Prestige	0,30	0,01	0,93	0,00	0,26	0,18	0,01	0,99	0,00
Economic Rewards and Security	0,19	0,01	0,11	0,01	0,21	0,00*	0,03	0,06	0,02
Aesthetics	0,01*	0,02	0,67	0,00	0,08	0,01*	0,02	0,35	0,01
Cultural Connectedness	0,20	0,01	0,29	0,01	0,07	0,24	0,01	0,33	0,01

*p* ≤ 0,01\*

In Table 5, the ANOVAs for the different values and the categories of the respondents were investigated. No significant differences were found for Autonomy, Prestige, and Cultural Connectedness. There were significant differences between the years of service of the respondents and Economic Rewards and Security, Improvement of the Self and Others, and Aesthetics. Physical Activity and Risk had significant differences with education. Social Relations had significant differences with age, and Aesthetics had significant differences with both age of the respondents and years of service.

Table 6 shows the relationships between the career anchors and the categories of the employees who participated in the research by means of ANOVAs.

Table 6  
ANOVAs – Differences in the Careers Anchors and the Characteristics of the Participants

	Age		Education		Home language	Years of service		Job level	
	<i>p</i>	$\eta^2$	<i>p</i>	$\eta^2$	<i>p</i>	<i>p</i>	$\eta^2$	<i>p</i>	$\eta^2$
Security	0,26	0,01	0,12	0,01	0,84	0,68	0,00	0,20	0,01
Influence	0,22	0,01	0,11	0,01	0,99	0,24	0,01	0,50	0,01
Autonomy	0,38	0,01	0,00*	0,04	0,52	0,08	0,10	0,15	0,01
Service	0,30	0,01	0,00*	0,06	0,58	0,07	0,01	0,01*	0,03
Management	0,34	0,01	0,00*	0,05	0,83	0,48	0,01	0,00*	0,05
Challenge	0,32	0,01	0,03	0,02	0,75	0,72	0,00	0,19	0,01

*p*≤0,01\*

In Table 6, the ANOVAs for the different career anchors and the characteristics of the respondents were investigated. No significant differences were found for Security, Influence, and Challenge as career anchors and the characteristics of the participants. There were significant differences between the education category and Autonomy, Management, and Service as career anchors. Management and Service also had significant differences with the job level categories.

In Table 7, the values and career anchors are investigated with a rotated factor matrix.

Table 7  
Rotated Factor Matrix for Values and Career Anchors

	Factor	
	1	2
Prestige	<b>0,72</b>	0,26
Improvement of the Self and Others	<b>0,70</b>	0,29
Aesthetics	<b>0,66</b>	0,08
Economic Rewards and Security	<b>0,66</b>	0,20
Cultural Connectedness	<b>0,58</b>	-0,03
Social Relations	<b>0,56</b>	0,15
Physical Activity and Risk	<b>0,53</b>	0,06
Autonomy	<b>0,52</b>	0,17
Security	0,06	0,05
Challenge	0,11	<b>0,81</b>
Influence	0,15	<b>0,75</b>
Service	0,17	<b>0,68</b>
Autonomy	0,08	<b>0,47</b>
Management	0,27	<b>0,43</b>

The values factors' loaded together, as did the career anchors' factors. The only factor that did not have a significant value was security as measured by the Career Orientation Inventory, with security and technical or functional competence as career anchors. The first

combination of factors could be called life values, whilst the second cluster of factors might be classified as work values.

## DISCUSSION

The aim of this study was twofold. Firstly, it was intended to test the psychometric qualities of two instruments, being the Values Scale and the Career Orientation Inventory in order to cluster specific factors together. Secondly, it aimed to investigate the relationship of the identified factors of these instruments with the demographic variables such as age, education, gender, home language, years of service, and job level in the context of the chemical industry's employees.

Previous research was done on career anchors and values separately (Derr, 1980; Rokeach, 1973; Schein, 1978; Super & Nevill, 1985), but more recent research highlighted the lack of consistent results due to consideration of fit along a number of dimensions simultaneously (Kristoff, 1996). As pointed out by Brown and Brooks (1990), occupational choice is largely influenced by interest, values, capacities, and opportunities. This led the researcher to believe that values and career anchors might be clustered together to measure similar values.

Both the psychometric instruments originally tested for specific values (Super & Nevill, 1985) and career anchors (Schein, 1985) that were indicated in the factor analyses, but the factor loadings did not make sense until the researcher created new combined values and applied the same method to the career anchors. Although some similarities exist in the names of the combinations, none of the newly suggested groupings are exactly the same as found in the original research. No supporting research was found to indicate similar results. Possible explanations that should be investigated as recommended could be that the population within the chemical industry might possibly affect the research as the biographical information might have an impact. This study is also conducted years later than the original studies, maybe people adapted to the changing world of work and completed the questionnaires with a different mindset. Another possibility is that the research was only done in South Africa and not internationally.

The following tables indicate the original values and career anchors that the respective instruments measured, as well as the suggested values and career anchors as statistically found and suggested in this research.

Table 8

*Values as Measured by the Values Scale*

Values as originally measured by the Values Scale (Super & Nevill, 1985)	Clustered values as suggested in this research
Ability utilization	Improvement of the Self and Others
Achievement	Physical Activity and Risk
Advancement	Autonomy
Aesthetics	Social Relations
Altruism	Prestige
Authority	Economic Rewards and Security
Autonomy	Aesthetics
Creativity	Cultural Connectedness
Cultural identity	
Economic rewards	
Economic security	
Own life style	
Personal development	
Physical activity	
Physical strength	
Prestige	
Risk	
Social interaction	
Social relations	
Spirituality	
Variety	
Pleasant working conditions	

Table 9

*Career anchors as measured by the Career Orientation Inventory*

Career anchors as measured by the Career Orientation Inventory (Schein, 1985)	Clustered career anchors as suggested in this research
Geographical security	Challenge
Job security	Management
Autonomy and independence	Security
Entrepreneurship	Service
Technical/Functional competence	Autonomy
Managerial competence	Influence
Service dedication	
Pure challenge	
Lifestyle integration	

From the rotated factor matrix, the researcher draws the conclusion that the clustered values as measured by the Values Scale might be indicative of measuring life values; the cluster of career anchors as measured by the Career Orientation Inventory might be indicative of measuring work values. The most important values as measured by the Values Scale form the core of one's personality and the ground for one's self-concept (Rokeach, 1973) and because values, irrespective of new clusters as found in this research, give meaning to life and are important parts of creating an identity according to Shaffer (1978), values could also be described as life values. The reason for career anchors to now be measuring work values might be because career anchors provide the basis for career choices (Schein, 1985) and Greenhaus (1987) is of the opinion that career anchors are decisive when a career decision has to be made. Brown (2002) found that work values are the values that individuals believe should be satisfied as a result of their participation in the workplace.

The life values correlate with either large or medium effect with the other factors within the life values grouping. The same applies to the work values that correlate with either high or medium effect with the other work values. The only correlations with medium effect that occur between life values and work values are the Improvement of the Self and Others with Service; Physical Activity and Risk with Management; and with Influence and Management. Thus, the work and life values will measure their respective values and can not be combined. This proves the opposite of hypothesis one, as the assumption was that the different values as measured by the Values Scales and Career Orientation Inventory could be clustered together.

To investigate hypothesis two, the effect of demographics of the respondents on values and career anchors were investigated, as research done by Kram (1996) indicated that knowledge about age, tenure and personality could predict career concerns. Bennett et al. (1997) compared gender trends, but the findings were not supported by the findings of the current study. The only similarity that occurred was that education is shared between values and career anchors. Again, the hypothesis could not be accepted.

A limitation of this study was that a cross-sectional design was used. Longitudinal studies are necessary to get a better idea of the relationships between life and work values. Although Brown (1996) suggests that people's work values are a component of their life values, this research cannot support the mentioned findings.

### **RECOMMENDATIONS**

Despite the overlapping interest from career psychology and the influence of the nature of organisations on career, there is little interaction or collaboration between those working in these two areas according to Collin (1998), as some research focus on fit between the individual and the occupation (Holland, 1959), while others focus on fit between the organisation and the job (Argyris, 1964). This results in different sets of research focusing on skills, interests or values, while different dimensions of the environment (e.g. the required work duties of a job, the dominant values in a profession, or the culture of a firm) have been used on the institutional side of the equation (Meir, Hadas, & Noyfeld, 1997). Further research is recommended to investigate this as little synergy is achieved in developing appropriate new approaches to the multidimensional concept and experience of career (Collin, 1998) if the concepts are kept separate.

The Values Scale and Career Orientation Inventory can provide valuable information when person-fit information would be considered, but the personality traits should also be tested when the values and career anchors are tested. More research should be done regarding the influence of the biographical information of the study population used.

Kram (1996) highlights that if one knew a person's age, tenure, and personality and/or learning style, one could predict the person's career concerns. As this research does not

support the findings of Bennett et al. (1997) it is advised that further research be conducted to investigate the matter.

Brown's (1996) values-based holistic model of career and life role choices and satisfaction places values at the centre of the career decision-making process. According to the model, each individual develops a small number of values, which are prioritised and arranged in hierarchical order; resulting in behaviour that will be strongly guided by the values ranked highest. If organisations and managers could be in a position to understand the values that determine career satisfaction the accuracy of predicting a match between the individual and his occupation can probably be increased (Savickas, 1992). This emphasises the importance about knowledge about life values and work values. Not much literature exists on values and career anchors as concepts, which makes validating conclusions difficult. Parallel research is suggested to further investigate the suggested values and career anchors.

This study was done in a South African chemical industry, it should be done in a large international population to determine if the findings of this research is supported.

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## **CHAPTER 4**

### **RESEARCH ARTICLE 3: JOB DEMANDS, JOB RESOURCES AND WELLNESS OF EMPLOYEES IN THE CHEMICAL INDUSTRY**

# **JOB DEMANDS, JOB RESOURCES AND WELLNESS OF EMPLOYEES IN THE CHEMICAL INDUSTRY**

## **ABSTRACT**

The aim of the study was to determine whether there is a relationship between job demands and job resources, and burnout and engagement. The study was done in the chemical industry with a sample ( $N=200$ ) representing all different job levels in the organisation. A cross-sectional survey design was used. Measuring instruments were the Job Demands-Resources Scale (JDERS), the Maslach Burnout Inventory-General Survey (MBI-GS), and the Utrecht Work Engagement Scale (UWES). A second-order factor analysis indicated that job demands consist of overload, and job resources of organisational support, growth opportunities, job insecurity, social support, and advancement. The study indicated that a lack of job resources and high job demands lead to unwellness, while the presence of job resources lead to well-being.

## **OPSOMMING**

Die doel van die studie was om te bepaal of daar 'n verhouding bestaan tussen werkeise en werkhulpbronne, en tussen uitbranding en begeestering. Die studie is onderneem in die chemiese bedryf, deur middel van 'n steekproef ( $N=200$ ) wat al die verskillende posvlakke in die organisasie verteenwoordig het. Daar is gebruik gemaak van 'n dwarsdeursnee-opnameontwerp. Die volgende meetinstrumente is gebruik: die Werkeise-Hulpbronne-skaal (JDERS), die Maslach Uitbrandingsvraelys-Algemene Opname (MBI-GS), en die Utrecht Werkbegeesteringskaal (UWES). 'n Tweeorde-faktoranalise het daarop gedui dat werkeise bestaan uit oorlading, en werkhulpbronne uit organisasie-ondersteuning, groeigeleenthede, werksonsekerheid, sosiale ondersteuning, en geleenthede om vooruit te gaan. Die studie het daarop gedui dat 'n gebrek aan werkhulpbronne en hoë werkeise tot "nie-welstand" lei, terwyl die aanwesigheid van werkhulpbronne tot welstand lei.

In recent times there has been a revival of interest in the nature of the employment relationship (D'Art & Turner, 2006). The question is what is the secret of keeping engaged employees in the positions they were appointed in if we consider that the employment relationship has changed dramatically over the last few years, altering the type of work that people do, when they work and how much they do (Atchison, 1991; Barling, 1999). According to Dickens (2004), the employment relationship in the future, as in the past, is likely to be characterised by continuing diversity and complexity. Employees have to cope with the demands that arise from fulfilling various roles – often with limited resources (Maslach, Schaufeli, & Leiter, 2001). Siu (2002) argues that a stressful transaction occurs when a person both exerts influence upon and responds to his/her environment. Following a transactional perspective, stress arises when the demands of a particular encounter are appraised by the individual and is about to exceed the available resources available, threatening the person's well-being (Lazarus, 1991) and bringing about change in his/her psychological and or physiological condition in order to help him/her cope with the encounter (Cooper, Dewe, & O'Driscoll, 2001; Sadri & Marcoulides 1997; Siu, 2002).

Stress is an ongoing process that involves the individual transacting with his or her environment, while assessing the encounters and trying to cope with the issues that arise (Cooper et al., 2001); thus, it is stated that stress should be seen as a transaction. To Cooper et al. (2001) the term "transaction" implies that "stress is neither in the person nor in the environment, but in the relationship between the two". Mullins (1999) argues that stress is individually defined: one person's stress can be another's excitement or energiser. Although stress may activate people (for some it may be immobilising) with possible positive behavioural consequences, the physiological impact upon the person should not be forgotten; thus, the individual's well-being. In other words, people bring along individual differences in terms of their personality and life experience that will determine their proneness their responses to stress (Rees, 1995). It is the person's appraisal of the situation that determines whether the situation is a stressor or not (Siu, 2002). For this reason, Cooper et al. (2001) argue that the transactional perspective emphasises three important aspects or themes: 1) a dynamic cognitive state, 2) a disruption or enhancement in normal functioning, and 3) the resolution of that disruption or imbalance. These themes also underlie the framework for modelling stress, as well as the essence of the stress experience (Cooper et al., 2001).

There is significant evidence to suggest that chronic and high levels of occupational stress,

left unchecked, could be related to mental and physical well-being, job dissatisfaction, absenteeism, stress-related injuries, turnover and intention to quit (Breck, 2000; Corville & Bernardi, 1999; Dunn, 2000; Siu, 2002; Winefield, Gillespie, Stough, Dua, & Hapuararchchi, 2002). Findings have shown significant correlations between higher levels of psychological strain and incidences of self-reported stress-related health symptoms, such as sleeping difficulties, headaches, and viral and cold infections (Breck, 2000; Corville & Bernardi, 1999; Dunn, 2000; Winefield et al., 2002). Furthermore, these symptoms significantly associate with stress-related medical conditions reported by employees, such as migraines, hypertension and coronary heart disease. For that reason, Siu (2002) argues that it is of utmost importance to identify potential occupational stressors as well as variables which have beneficial consequences for both employees and their organisations. Stressors can be seen as the antecedents (stimuli) of the transaction and these stressors normally lead to individual strain (Breck, 2000). Strain refers to the individual's psychological, physical and behavioural response to stressors (Breck, 2000; Cooper et al., 2001). Therefore, certain variables might moderate the effects of occupational stress. Cooper et al. (2001) define a moderator as a variable that affects the direction and/or strength of the relation between an independent (or predictor) variable and a dependent (or criterion) variable.

Lu (1999) argues that stress has become one of the most serious health issues; a problem not just for individuals, but also for their employers. Research conducted over the past three decades has shown that the experiences of occupational stress are closely related to the health and safety of individuals, and thus to the well-being of their organisations or institutions (Rees, 1995; Rees & Redfern, 2000). According to Sadri and Marcoulides (1997), stress may be defined as a situation in which factors interact with a person to change his or her psychological and or physiological condition, such that the person is forced to deviate from normal functioning. Cooper, Sloan and Williams (Siu, 2002) categorise six sources of stress or occupational stressors, namely: factors intrinsic to the job, management role, relationships with others, career and achievement, organisational structure and climate, and home or work interference. Cooper et al. (2001) state that stressors could be grouped into three major categories, namely: job specific sources, organisational sources, and individual or personal sources.

In order to explain the causal pattern or relationship between occupational stresses and the outcomes thereof, several theoretical models have been developed. The *Person-Environment*

*Fit Model* proposed by French, Caplan, and Harrison (1982) views stress as arising from a misfit between the requirements of the job (e.g. demands, resources) and the values, skills and traits of the individual (Cooper et al., 2001; Winefield et al., 2002). Implicit in the notion of the misfit is the person's ability to handle (or cope with) the encounter, while aspects such as values, resources, demands and skills available help to determine the perceived misfit. Subjectivity of the person (how the individual perceives the encounter) would furthermore increase the likelihood that strain will occur. The *Job Demands-Control Model* of Karasek (1979) is based on the proposition that the interaction between job demands and job control (decision latitude) is the key to explaining strain-related outcomes (Cooper et al., 2001). In other words, jobs that combine high levels of demand with low levels of autonomy, control or decision latitude are the most stressful (Winefield et al., 2002). Rothmann, Malan, and Rothmann (2001) regard burnout as a particular kind of prolonged job stress. In other words, a particular, multidimensional, chronic stress reaction that goes beyond the experience of mere exhaustion. The separate dimensions, i.e. burnout, engagement, job demands and job resources as viewed by the researcher to influence well-being for the individual will be explored and defined.

## **Burnout**

Schaufeli and Enzmann (1998) identified exhaustion as a core indicator of burnout and a sense of reduced effectiveness as an accompanying symptom, but add three general symptoms, namely distress (affective, cognitive, physical and behavioural), decreased motivation, and dysfunctional attitudes and behaviours at work. Maslach (1982, 1993), Maslach, Jackson, and Leiter (1996), and Maslach, Schaufeli, and Leiter (2001) describe burnout as a syndrome consisting of three dimensions, namely feelings of emotional exhaustion, cynicism and reduced personal accomplishment. Corville and Bernardi (1999) define burnout as a persistent, negative, work-related state of mind in 'normal' individuals that is primarily characterised by exhaustion, which is accompanied by distress, a sense of reduced effectiveness, decreased motivation, and the development of dysfunctional attitudes and behaviours at work.

Research over the past two decades has shown that burnout is not only related to negative outcomes for the individual, including depression, a sense of failure, fatigue, and loss of motivation, but also for the organisation, including absenteeism, turnover rates and lowered

productivity (Blassingame, 2003; Corville & Bernardi, 1999; Dunn, 2000). According to Levert, Lucas, and Ortlepp (2000), burned-out workers show a lack of commitment and are less capable of providing adequate services, especially along dimensions of dedication and initiating involvement with clients (Fryer, Poland, Bross, & Krugman, 1988; Maslach, 1982). Burned-out workers are also too depleted to give of themselves in a creative, co-operative fashion (Sammut, 1997).

According to Schaufeli and Enzmann (1998), possible antecedents of burnout can be classified into biographical characteristics, personality characteristics, work-related attitudes and work, and organisational characteristics. Organisational factors that contribute to burnout are work overload (Bacharach, Bamberger, & Conley, 1991; Corville & Bernardi, 1999; Landsbergis, 2003), poor collegial support (Golembiewski & Munzenrider, 1988), role conflict and role ambiguity (Miller, Ellis, Zook, & Lyles, 1990) and lack of feedback (participation in decision making and autonomy). These factors represent demands on employees (also referred to as job stressors), which are included in most models of burnout (Schaufeli & Enzmann, 1998).

## **Engagement**

A similar shift from burnout towards its opposite, work engagement, has been put forward by Maslach et al. (2001). This implies that employees' adaptation at work could also be studied in a positive way. According to Maslach and Leiter (1997), work engagement is characterised by energy, involvement and efficacy, which are the direct opposites of the burnout dimensions exhaustion, cynicism and lack of professional efficacy. Engaged individuals have a sense of energetic and effective connection with their work activities and they see themselves as able to deal completely with the demands of work.

Work engagement is a person's involvement in his or her job (Roberts & Davenport, 2002). Individuals who are highly engaged in their jobs identify personally with the job and are motivated by the work itself. They tend to work harder and more productively than others, and are more likely to produce the results their customers and organisations want. Engaged employees report that their jobs make good use of their skills and abilities, are challenging and stimulating, and provide them with a sense of personal accomplishment (Roberts &

Davenport, 2002). According to Schaufeli, Salanova, González-Romá, & Bakker, 2002), work engagement is defined as a positive, fulfilling, work-related state of mind that is characterised by vigour, dedication and absorption. Vigour refers to high levels of energy and mental resilience while working, as well as a willingness to exert effort and to persist even through difficult times. Dedication is described as a sense of significance, enthusiasm, inspiration, pride and challenge. Absorption refers to a tendency to be fully concentrated and deeply engrossed in work, as a result of which time passes quickly and one has difficulty to detach oneself from one's work. It also includes focused attention, a clear mind, mind and body unison, effortless concentration, complete control, loss of self-consciousness, distortion of time, and intrinsic enjoyment (Csikszentmihalyi, 1990).

Work engagement adds to well-being and work behaviour for the following reasons: it is related to positive organisational outcomes such as job satisfaction, motivation, and low turnover (Bakker, Demerouti & Schaufeli, 2003; May, Gilson, & Harter, 2004; Schaufeli & Bakker, 2004); it is also related to positive organisational behaviour such as personal initiative and learning (Sonnentag, 2003); and lastly, employees who are engaged in their jobs tend to be committed to their organisations (Blizzard, 2002).

### **Job demands and job resources**

According to the Conservation of Resources (COR) theory (Hobfoll, 1989, 1998), people strive to retain, protect and build resources and any threats towards the person might be the potential or actual loss of their valued resources. Negative outcomes (i.e. stress, burnout and low work engagement) are likely to occur when there is either a threat of a net loss of resources or a lack of resource gain following the investment of resources (Hobfoll, 1989; Taris, Schreurs, & Van Iersel-Van Silfhout, 2001). The COR theory measures high and low work engagement, as does the Job Demands-Resource (JD-R) model developed by Demerouti, Bakker, Nachreiner, and Schaufeli (2001). Job demands and job resources are the two broad categories in which the Job Demands-Resources model measures well-being. Job demands refer to physical, psychological, social or organisational aspects of the job that require sustained physical and or psychological effort and that are associated with certain physiological and or psychological costs (e.g. work pressure, role overload, and emotional demands). Job resources are those physical, psychological, social or organisational aspects of the job that may be functional in achieving work goals, reducing job demands, and

stimulating personal growth and development. Resources may be located at a level of the organisation (e.g. salary, career opportunities, job security), interpersonal and social relation (e.g. supervisor and co-worker support, team climate), the organisation of work (e.g. role clarity, participation in decision-making), and the level of the task (e.g. performance feedback, skill variety, task significance, task identity, autonomy). Job resources may play either an intrinsic motivational role (by fostering the employee's growth, learning and development), or an extrinsic motivational role (by being instrumental in achieving work goals).

In general, job demands and resources are negatively related, since job demands, such as a high work pressure and emotionally demanding interaction with clients, may preclude the mobilisation of job resources. Also, high job resources, such as social support and feedback, may reduce the effects of job demands (Demerouti et al., 2001). According to Schaufeli and Bakker (2004), work engagement is strongly influenced by job resources. The COR theory (Hobfoll, 1989, 1998) is a relevant theory for understanding the effects of job resources (or the lack thereof) on employees. The COR theory's central principle is that people strive to obtain, retain and protect what they value. In general, resources are those personal energies and characteristics, objects and conditions that are valued by individual or that serve as means for the attainment of other objects, personal characteristics, conditions or energies. Examples of job resources include social support, job enhancement opportunities, autonomy, participation in decision-making, and being psychologically well (Hobfoll, 1989; Lee & Ashforth, 1996). Workload, role ambiguity, role conflict, and stressful events in general are examples of job demands (Wright & Hobfoll, 2004). According to the COR theory, personal resources affect each other and exist as a resource pool, and an expansion of one is often associated with the other being augmented (Hobfoll, 1998).

When the external environment lacks resources, individuals cannot reduce the potentially negative influence of high job demands and they cannot develop themselves in their job and organisation. Neither can they develop themselves further in their job and organisation. The *Conservation of Resources theory* predicts that, in such a situation, employees will experience a loss of resources or failure to gain an investment (Hobfoll, 1989). Moreover, in order to reduce this discomfort or job stress, employees will attempt to minimise losses. With the intention of achieving equity without having further negative, personal consequences, they are likely to reduce their discretionary inputs.

The results of studies by Kahn (1990) and May et al. (2004) explained some of the reasons why job demands and job resources impact on the work engagement of individuals.

Another assumption in the JD-R model is that working characteristics may evoke two psychologically different processes, namely an energetic process of wearing out in which high job demands exhaust the employee's energy, and a motivational process in which lacking resources precludes dealing effectively with job demands, and foster mental withdrawal (Demerouti et al., 2001). The energetic process can be described as mental fatigue that is a response of the mind and body to the reduction in resources due to mental task execution. It warns of the increasing risk of performance failure. Under normal circumstances, people become tired of their everyday work activities, but their energy resources are sufficient to meet the task demands. However, when a person is working under high levels of mental workload and is already fatigued (e.g. at the end of a workday), extra energy to compensate for fatigue which has to be mobilised through mental effort in order to maintain task performance. The mobilisation of extra energy may result in acute fatigue. A subsequent return to physiological and emotional baseline levels is crucial. Incomplete recovery from workload demand disrupts the energetic homeostasis, which in turn may lead to chronic effects on health and well-being. When incomplete recovery takes place, the effect of high workload demands can accumulate gradually, carrying over from one day to the next. The motivational process occurs when organisations do not provide or reward employees with job resources. The long-term consequences are withdrawal from work, and reduced motivation and commitment. In such a situation, a reduction of motivation or withdrawal from work can be an important self-protection mechanism that may prevent the future frustration of not being able to achieve work-related goals. When the external environment lacks resources, individuals cannot reduce the potentially negative influence of high job demands and they cannot achieve their work goals. Furthermore, they cannot develop themselves in their job and organisation. The *Conservation of Resources theory* predicts that, in such a situation, employees will experience a loss of resources or failure to gain an investment (Hobfoll, 1989). Moreover, in order to reduce this discomfort or job stress, employees will attempt to minimise losses. With the intention of achieving equity without having further negative, personal consequences, they are likely to reduce their discretionary inputs.

## **Aims and hypotheses**

This research focuses on the influence of job stressors and on the characteristics of the sample group in relation to burnout, engagement, and job demands and job resources. The objective of the study was to determine the extent of the relationship between job demands and job resources, and burnout and engagement.

The hypotheses of this study are as follows:

H1: Job resources lead to work engagement, and this might be an indicator of well-being of employees in the chemical industry

H2: Job demands and a lack of job resources lead to low work engagement and high burnout of employees in the chemical industry

## **METHOD**

### **Research design**

A cross-sectional survey design, where a sample is drawn from a population at a particular point in time (Shaughnessy & Zechmeister, 1997), was used to achieve the research objectives.

### **Participants**

Surveys were distributed to 200 randomly selected employees in Sasolburg, Secunda and Rosebank. A total of completed questionnaires were returned. Only 187 of the questionnaires were used for data analysis, with 13 not useable on account of missing data. This represented a participation rate of 93,5%.

Table 1

*Characteristics of the Participants (N=200)*

Item	Category	Frequency	Percentage
Age	< 30	29	14,5
	30 – 39	51	25,5
	40 – 49	76	38
	> 50	42	21
	Missing	2	1
Education	Grade 12 and lower	130	65
	Diploma	51	25,5
	4-year degree or honours	12	6
	Postgraduate degree	2	1
	Missing	5	2,5
Gender	Male	144	72
	Female	48	24
	Missing	8	4
Home language	Afrikaans/English	147	73,5
	African	48	24
	Missing	5	2,5
Years of service	< 5	43	21,5
	5 – 14	46	23
	15 – 24	80	40
	>25	26	13
	Missing	5	2,5
Job level	Employees (<L7)	109	54,5
	Supervisor (L7-L6C)	67	33,5
	Middle Managers (L5B-L5A)	6	3
	Senior Managers (L4-L3)	5	2,5
	Missing	13	6,5

According to Table 1, 38% of the respondents were between the ages of 40 and 49 years. Sixty-five per cent of the participants held a grade twelve qualification or less. The gender distribution (72% males) compared well with the demographics of the company. A total of 73,5% of the respondents reported either Afrikaans or English as their home language – with the African languages only representing 24%. Forty per cent of the participants had 15 to 24 years of service with the company. More than half (54,5%) of the respondents were employed

on a job level lower than level 7. Possible reasons for missing data might be that individuals feared being identified or did not understand the questions.

### **Measuring battery**

A Wellness Questionnaire is used to measure burnout and engagement by combining the *Maslach Burnout Inventory-General Survey* (MBI-GS) (Schaufeli, Leiter, Maslach, & Jackson, 1996) and the *Utrecht Work Engagement Scale* (UWES) (Schaufeli, Salanova, González-Romá, & Bakker, 2002). The MBI-GS consists of 16 items measuring burnout, which are divided into three subscales: Exhaustion, Cynicism, and Professional Efficacy. All items are scored on a seven-point Likert scale ranging from 0 (*never*) to 6 (*every day*). The internal consistencies (Cronbach alpha coefficients) reported by Schaufeli et al. (1996) varied from 0,87 to 0,89 for Exhaustion; 0,73 to 0,84 for Cynicism; and 0,76 to 0,84 for Professional Efficacy. Test-retest reliabilities after one year were 0,65 for Exhaustion; 0,60 for Cynicism; and 0,67 for Professional Efficacy (Schaufeli et al., 1996). Storm and Rothmann (2003) confirmed the three-factor structure of the MBI-GS in a sample of 2 396 SAPS members, but recommended that item 13 be excluded from the questionnaire. The following Cronbach alpha coefficients for the MBI-GS in South Africa were obtained: 0,88 for Exhaustion; 0,79 for Cynicism; and 0,78 for Professional Efficacy (Storm & Rothmann, 2003). The three factors extracted for the factor analysis of this study accounted for 49,96% of the total variance of the data. However, because Professional Efficacy is regarded as a personality dimensions, only the Exhaustion and Cynicism subscales were used in this study. The *Utrecht Work Engagement Scale* (UWES) (Schaufeli et al., 2002) will be used to measure the levels of engagement of the participants. The UWES includes three dimensions, namely Vigour, Dedication and Absorption, which is conceptually seen as the opposite of burnout and is scored on a seven-point frequency rating scale, varying from 0 (*never*) to 6 (*every day*). The questionnaire consists of 17 questions and includes questions like "I am bursting with energy every day in my work"; "Time flies when I am at work" and "My job inspires me". The alpha coefficients for the three subscales varied between 0,68 and 0,91. The alpha coefficient could be improved (it varies between 0,78 and 0,89 for the three sub-scales) by eliminating a few items without substantially decreasing the scales internal consistency. Storm (2002) obtained the following alpha coefficients for the UWES in a sample of 2396 members of the South African Police Service: Vigour: 0,78; Dedication: 0,89; Absorption: 0,78. Naude and Rothmann (2004) obtained the following alpha coefficients in a sample of

emergency workers in South Africa: Vigour and Dedication: 0,87, but for the Absorption subscale only 0,61. However, only two subscales, namely Vigour and Dedication were used in this study.

The *Job Demands-Resources Scale* (JDRS) (Jackson & Rothmann, 2005; Rothmann & Jordaan, 2006) was developed to measure job demands and job resources. The scale was developed on a literature review as well as interviews with educators in the North-West Province. Items were developed and checked for face validity. The JDRS consists of 48 items. The questions are rated on a four-point scale ranging from 1 (*never*) to 4 (*always*). Items related to typical demands and resources were generated, namely role overload (pace and amount of work, mental load and emotional load), job characteristics (variety, opportunities to learn and independence), social support (relationship with colleagues and contact possibilities), organisational support (relationship with immediate supervisor, ambiguities about work, information, communication, participation), uncertainty about the future, remuneration, and career possibilities.

### **Statistical analysis**

The statistical analysis for the MBI-GS, UWES and the JDRS was carried out on the SPSS Program (SPSS Inc., 2003). Firstly, a simple principal components analysis was conducted on the constructs that form part of the measurement model. The eigenvalues and scree plot were studied to determine the number of factors. Second, a principal factor analysis with a direct oblimin rotation was conducted if factors were related, and a principal factor analysis with a varimax rotation was used if the obtained factors were not related (Tabachnick & Fidell, 2001). Descriptive statistics were also used to explore the data. Exploratory factor analyses and Cronbach alpha coefficients were then computed to assess the reliability of the constructs that were measured in this study (Clark & Watson, 1995).

## **RESULTS**

The results of a factor analysis were conducted on the JDRS and are shown in Table 2. Analysis of the scree plot indicated that six factors could be extracted. Loadings of variables on factors are shown.

**Table 2**  
*Factor Analysis for Job Demands-Resources Scale*

	1	2	3	4	5	6
Can you discuss work problems with your direct supervisor?	<b>0,72</b>	0,23	0,08	-0,05	0,18	-0,01
In your work, do you feel appreciated by your supervisor?	<b>0,72</b>	0,07	0,22	-0,14	0,07	0,08
Do you know exactly what your direct supervisor thinks of your performance?	<b>0,70</b>	0,06	0,19	0,12	0,15	-0,05
Do you get on well with your supervisor?	<b>0,68</b>	0,10	0,05	-0,16	0,12	0,12
Can you participate in decisions about the nature of your work?	<b>0,67</b>	0,29	0,13	-0,12	0,13	0,00
Can you count on your supervisor when you come across difficulties in your work?	<b>0,67</b>	0,04	0,14	-0,21	0,27	0,15
Does your direct supervisor inform you about how well you are doing your work?	<b>0,66</b>	0,38	0,13	-0,10	-0,02	0,01
Are you kept adequately up to date about important issues within your department?	<b>0,64</b>	0,41	0,16	-0,01	0,08	0,07
Is it clear to you whom you should address within the department for specific problems?	<b>0,63</b>	0,30	0,15	-0,10	0,21	0,01
Do you receive sufficient information on the results of your work?	<b>0,62</b>	0,23	0,06	0,00	0,06	-0,15
Is the decision-making process of your department clear to you?	<b>0,59</b>	0,45	0,13	0,01	0,01	0,04
Do you receive sufficient information on the purpose of your work?	<b>0,57</b>	0,31	0,08	0,04	0,10	-0,05
Do you know exactly what other people expect of you in your work?	<b>0,56</b>	0,05	-0,02	0,01	0,19	-0,04
Do you know exactly what you are responsible for and which areas are not your responsibilities?	<b>0,44</b>	0,08	-0,13	0,11	0,26	0,06
Does your work give you the feeling that you can achieve something?	0,25	<b>0,78</b>	0,14	-0,02	0,22	0,03
Does your job offer you opportunities for personal growth and development?	0,22	<b>0,72</b>	0,16	-0,01	0,05	0,05
Do you have enough variety in your work?	0,27	<b>0,64</b>	0,07	0,13	0,16	0,12
Does your job offer you the possibility of independent thought and action?	0,24	<b>0,61</b>	0,12	0,10	0,32	0,02
Does your job give you the opportunity to be promoted?	0,24	<b>0,48</b>	0,42	-0,12	0,05	0,08
Does your work make sufficient demands on all your skills and capacities?	0,12	<b>0,43</b>	-0,13	0,21	0,19	-0,01
Do you think that your organisation pays good salaries?	0,17	0,10	<b>0,87</b>	0,07	0,06	0,02
Can you live comfortably on your pay?	0,09	0,16	<b>0,79</b>	-0,02	0,16	-0,07
Do you think you are paid enough for the work that you do?	0,16	0,09	<b>0,76</b>	-0,08	0,07	-0,08
Does your job offer you the possibility to progress financially?	0,28	0,37	<b>0,61</b>	-0,07	-0,00	0,01
Do you have to remember many things in your work?	0,06	-0,04	-0,01	<b>0,65</b>	0,32	-0,04
Does your work put you in emotionally upsetting situations?	-0,09	0,08	0,03	<b>0,60</b>	-0,24	0,17
Do you work under time pressure?	-0,04	0,10	-0,07	<b>0,59</b>	-0,04	0,07
Are you confronted in your work with things that affect you personally?	0,04	0,10	0,05	<b>0,57</b>	-0,25	0,08
Do you have to be attentive to many things at the same time?	-0,08	0,02	0,06	<b>0,55</b>	-0,02	-0,20
Do you have to give continuous attention to your work?	0,03	0,10	-0,09	<b>0,54</b>	0,23	0,00
Do you have too much work to do?	-0,04	0,07	-0,31	<b>0,51</b>	-0,04	0,05
Do you have contact with difficult people in your work?	-0,11	-0,01	0,11	<b>0,49</b>	-0,04	0,09
If necessary, can you ask your colleagues for help?	0,21	0,13	0,15	-0,16	<b>0,54</b>	0,14
Can you have a chat with colleagues during working hours?	0,02	0,24	0,15	0,01	<b>0,52</b>	0,02
Can you count on your colleagues when you come across difficulties in your work?	0,23	0,20	-0,01	-0,02	<b>0,49</b>	0,11
Do you have contact with colleagues as part of your work?	0,26	0,03	-0,02	0,04	<b>0,44</b>	0,07
Do you find that you have enough contact with colleagues during working hours?	0,14	0,03	0,25	-0,02	<b>0,43</b>	0,13
Do you get on well with your colleagues?	0,41	0,10	0,05	-0,03	<b>0,42</b>	-0,03
Do you need to be more secure that you will keep your current job in the next year?	-0,03	0,10	-0,07	-0,01	0,18	<b>0,92</b>
Do you need to be more secure that you will still be working in one year's time?	0,03	0,05	0,03	0,06	0,15	<b>0,79</b>
Do you need to be more secure that next year you will keep the same function level as currently?	0,02	0,04	-0,0	0,11	0,09	<b>0,77</b>

The six extracted factors accounted for 53,33% of the total variance of the data. The first factor is labelled *Organisational Support* and includes 14 items which measure the relationship with the supervisor, communication, role clarity, information needed to do the job, and participation in decision-making. The second factor is labelled *Growth Opportunities* and includes 6 items which measure variety in the job, learning opportunities inherent in the

job, and autonomy. The third factor is labelled *Advancement*, and consists of 4 items which refer to pay, financial progress in the job, and promotion opportunities. *Overload* is the fourth factor and includes 8 items which measure pace and amount of work, quantitative load (e.g. having to remember many things) and emotional load. The fifth factor is labelled *Social Support* and includes 6 items which measure contact opportunities with others and social support from colleagues. The sixth factor is labelled *Job Insecurity* and includes 3 items which measure the respondents' indication that they need to be more secure in keeping their current job and the current level of functioning.

A second-order factor analysis was carried out on the six factors as measured by the JDRS to determine whether these factors represent the two higher order factors of job demands and job resources. The two factors that were extracted were Job Demands, which consisted of Overload, and Job Resources, which included Organisational Support, Growth Opportunities, Job Insecurity, Social Support, and Advancement.

### **Descriptive statistics**

Table 3 shows the descriptive statistics, Cronbach alphas coefficients and correlations of the MBI-GS, the UWES, and the JDRS.

Table 3

*Descriptive Statistics, Cronbach Alpha Coefficients and Correlations of the Measuring Instruments*

	Mean	SD	$\alpha$	1	2	3	4	5	6	7	8
1. Organisational Support	2,96	0,59	0,92	-	-	-	-	-	-	-	-
2. Growth Opportunities	2,81	0,61	0,86	0,60 <sup>++</sup>	-	-	-	-	-	-	-
3. Social Support	3,12	0,53	0,74	0,50 <sup>++</sup>	0,49 <sup>++</sup>	-	-	-	-	-	-
4. Advancement	2,36	0,70	0,85	0,49 <sup>++</sup>	0,44 <sup>++</sup>	0,31 <sup>++</sup>	-	-	-	-	-
5. Job Insecurity	2,83	0,93	0,89	0,11	0,21 <sup>*</sup>	0,23 <sup>*</sup>	-0,00	-	-	-	-
6. Overload	2,77	0,55	0,81	-0,06	0,15	0,01	-0,05	0,06	-	-	-
7. Engagement	4,55	1,02	0,92	0,40 <sup>++</sup>	0,39 <sup>++</sup>	0,36 <sup>++</sup>	0,08	0,10	0,06	-	-
8. Exhaustion	1,76	1,38	0,92	-0,26 <sup>*</sup>	-0,26 <sup>*</sup>	-0,12	-0,14	0,03	0,33 <sup>*</sup>	-0,39 <sup>*</sup>	-
9. Cynicism	2,41	1,30	0,69	-0,08	-0,15 <sup>*</sup>	-0,11	-0,17 <sup>*</sup>	0,07	0,09	-0,20 <sup>*</sup>	0,54 <sup>++</sup>

\*  $p \leq 0,05$  (statistically significant)

+  $r \geq 0,30$  (practically significant) (medium effect)

++  $r \geq 0,50$  (practically significant) (large effect)

Table 3 shows that acceptable Cronbach alpha coefficients were obtained for all the scales, except Cynicism if compared to the guideline of  $\alpha > 0,70$  as set by Nunnally and Bernstein (1994).

Growth Opportunities, Social Support, and Engagement are negatively related to Exhaustion and Cynicism; Organisational Support is negatively related to Overload, Exhaustion, and Cynicism, but Organisational Support is positively related to Growth Opportunities, and Social Support (large effect), as well as Advancement and Engagement (medium effect). Growth Opportunities is positively related to Social Support, Advancement, and Engagement (medium effect). Social Support is positively related to Advancement and Engagement (medium effect) and statistically significantly to Overload. Advancement is negatively related to Job Insecurity, Overload, Exhaustion, and Cynicism. Cynicism is positively related to Exhaustion (large effect). The few correlations that were not statistically significant were the correlations with Job Insecurity and Organisational Support and Advancement. No statistically significant correlations were found between Overload and Organisational Support, Growth Opportunities, Social Support, Advancement, and Job Insecurity; as well as Engagement and Advancement, Job Insecurity, and Overload; Exhaustion and Social Support, Advancement, and Job Insecurity. Lastly, no statistically significance was found between Cynicism and Organisational Support, Social Support, Job Insecurity and Overload.

## Multiple regression analyses

Multiple regression analyses were carried out with job demands and job resources, as measured by the JDRS, as independent variables, and work engagement, cynicism, and exhaustion, as measured by the UWES and the MBI-GS, as dependent variables in Table 4, 5, and 6. The independent variables were entered in blocks. Previous research done by Jackson, Rothmann, and Van de Vijver (2006) showed that job resources are better predictors of work engagement compared to job demands. In predicting work engagement, job resources were entered into the analysis, followed by job demands in the second step.

Table 4  
*Regression Analysis with Work Engagement as Dependent Variable*

Model	Unstandardised		Standardised	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$
	Coefficients		Coefficients						
	B	SE	Beta						
1									
(Constant)	1,86	0,51		0,37	0,00*	9,15*	0,47	0,23**	0,23*
Organisational Support	0,37	0,18	0,22	2,05	0,04*				
Growth Opportunities	0,43	0,18	0,26	2,47	0,02*				
Social Support	0,34	0,17	0,18	2,01	0,05*				
Advancement	-0,27	0,13	-0,19	-2,05	0,04*				
2									
(Constant)	1,47	0,68		2,18	0,03**	6,27*	0,48	0,23*	0,01
Organisational Support	0,38	0,18	0,22	2,08	0,04*				
Growth Opportunities	0,41	0,18	0,24	2,23	0,03*				
Social Support	0,36	0,17	0,20	2,11	0,04*				
Advancement	-0,26	0,13	-0,18	-2,01	0,05*				
Insecurity	-0,04	0,08	-0,03	-0,42	0,68				
Overload	0,16	0,15	0,09	1,06	0,29				
* $p \leq 0,05$ (statistically significant)									
+ $f \geq 0,10$ (practically significant) (medium effect)									
** $f \geq 0,35$ (practically significant) (large effect)									

The results in Table 4 show that 23% of the variance in work engagement (as measured by the UWES) is predicted by job resources. The regression coefficients of all resources (Organisational Support, Growth Opportunities, Social Support, and Advancement) were statistically significant predictors of work engagement. No statistically significant increase in

the  $R^2$  was obtained when job demands (i.e. overload) was entered into the regression analysis. Table 4 also shows that the standardised regression coefficients for Organisational Support (0,22), Growth Opportunities (0,24), and Social Support (0,20) were statistically significant predictors of engagement and that they were moderate and about equally strong.

Table 5  
*Regression Analysis with Cynicism as Dependent Variable*

Model	Unstandardised		Standardised	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	$R^2$	$\Delta R^2$
	Coefficients								
	B	SE	Beta						
<b>1</b>									
(Constant)	3,63	0,69		5,27	0,00*	1,33	0,19	0,04	0,04
Organisational Support	0,11	0,24	0,05	0,46	0,65				
Growth Opportunities	-0,15	0,23	-0,07	-0,65	0,52				
Social Support	-0,22	0,23	-0,10	-0,95	0,34				
Advancement	-0,22	0,18	-0,12	-1,23	0,22				
<b>2</b>									
(Constant)	2,95	0,91		3,24	0,00*	1,12	0,23	0,05	0,02
Organisational Support	0,16	0,25	0,08	0,66	0,51				
Growth Opportunities	-0,25	0,24	-0,12	-1,01	0,31				
Social Support	-0,26	0,23	-0,11	-1,10	0,27				
Advancement	-0,19	0,18	-0,11	-1,10	0,28				
Insecurity	0,14	0,12	0,11	1,24	0,22				
Overload	0,16	0,21	0,07	0,77	0,44				

\*  $p \leq 0,05$  (statistically significant)  
 +  $f \geq 0,10$  (practically significant) (medium effect)  
 ++  $f \geq 0,35$  (practically significant) (large effect)

The results in Table 5 show that 4% of the variance in Cynicism (as measured by the MBI-GS) is predicted by job resources. However, the standardised regression coefficients of three of the resources (namely Growth Opportunities, Social Support, and Advancement) were not statistically significant ( $p < 0,05$ ). A statistically significant increase from 4% to 5% is visible when job demands are entered into the regression analysis. None of the variables were however statistically significant ( $p < 0,05$ ) predictors of cynicism (as measured by the MBI-GS).

Table 6

*Regression Analysis with Exhaustion as Dependent Variable*

Model	Unstandardised		Standardised	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$
	Coefficients		Coefficients						
	B	SE	Beta						
1									
(Constant)	0,05	0,65		0,08	0,93	5,29*	0,26	0,07*	0,07*
Insecurity	-0,08	0,11	-0,06	-0,68	0,50				
Overload	0,67	0,21	0,26	3,23	0,00*				
2									
(Constant)	1,95	0,89		2,20	0,03**	5,10*	0,44	0,19**	0,12*
Insecurity	0,02	0,13	0,02	0,19	0,85				
Overload	0,76	0,20	0,30	3,72	0,00*				
Organisational Support	-0,26	0,24	-0,11	-1,10	0,28				
Growth Opportunities	-0,67	0,24	-0,30	-2,84	0,01*				
Social Support	-0,01	0,23	-0,00	-0,05	1,00				
Advancement	0,12	0,17	0,06	0,71	0,48				

\*  $p \leq 0,05$  (statistically significant)  
+  $f \geq 0,10$  (practically significant) (medium effect)  
\*\*  $f \geq 0,35$  (practically significant) (large effect)

The results in Table 6 show that 7% of the variance in Exhaustion (as measured by the MBI-GS) is predicted by job demands and 19% of the variance in Exhaustion is predicted by job demands and resources. The regression coefficient of one variable, namely Overload was statistically significant in the first step of the regression analysis. A statistically significant increase was obtained for the  $R^2$  by including the job resources (i.e. Organisational Support, Growth Opportunities, Social Support, and Advancement) into the regression analysis; increasing the 7% variance to 19%. Table 6 also shows that the standardised regression coefficients for Overload (0,30) en Organisational Support (0,30) were equally strong. The only statistically significant predictors of Exhaustion (as measured by the MBI-GS) were Overload and Growth Opportunities.

## DISCUSSION

The objective of this study was to investigate the relationship between job demands and job resources, and burnout and engagement in the chemical industry. The results confirmed that job resources (such as growth opportunities, organisational support and advancement) predicted engagement, whereas job demands (overload) impacted negatively on cynicism and exhaustion (both components measuring burnout).

Six internally consistent factors were extracted from the JDRS, namely organisational support, growth opportunities, social support, overload, advancement, and job insecurity. A second-order factor showed that these factors represent two higher order factors, being job demands and job resources. These results support the findings of Demerouti et al. (2001) as stated in the Job Demands-Resources model.

Growth opportunities and social support have a strong relationship with organisational support, which in turn is supported by the Job Demands-Resource (JD-R) model as developed by Demerouti et al. (2001). Advancement also has a relationship with organisational support, growth opportunities, and social support.

Engagement also has a positive relationship with organisational support, growth opportunities, and social support; this might be indicative of the employee who stays in the company, through highs and lows (Maslach & Leiter, 1997). Growth opportunities have a relationship with advancement and social support, which makes a company more attractive to work for and provides opportunities to the engaged employee. As engagement adds to well-being, it enhances job satisfaction, motivation, and low turnover (Bakker et al., 2003; May et al., 2004; Schaufeli & Bakker, 2004). This means that engaged individuals tend to be committed to their organisations, as predicted by Blizzard (2002). This proves the first hypothesis correct.

Cynicism has a strong relationship with exhaustion. Exhaustion was related to job demands (overload) and a lack of organisational support, growth opportunities, and social support. The combination of cynicism and exhaustion might be an indicator of burnout (Corville & Bernardi, 1999). Adding weight to this conclusion, cynicism has a negative relationship with growth opportunities and advancement. A lack of growth opportunities, social support, and

advancement might also increase cynicism; a lack of job resources might therefore be indicative of burnout, which proves the second hypothesis correct.

The regression coefficients support the finding of Demerouti et al. (2001) that high job resources might lead to lowering the job demands. As indicated by Hobfoll (1989), resources are those personal energies and characteristics, objects and conditions that are valued by the individual or that serve as means for the attainment of other objects, personal characteristics, conditions or energies. When the external environment lacks resources, individuals cannot reduce the potentially negative influence of high job demands and they cannot achieve their work goals, which explains the low variance exhaustion had with job demands. Individuals cannot develop themselves in their job and organisation – the organisation needs to assist with this process. Specific training and development interventions should be investigated and implemented for the employees. The organisation could utilise the information as found in the research in conjunction with the JD-R model. The *Conservation of Resources theory* predicts that in such a situation employees will experience a loss of resources or failure to gain an investment (Hobfoll, 1989). Moreover, in order to reduce this discomfort or job stress, employees will attempt to minimise losses. Another assumption in the JD-R model is that working characteristics may evoke two psychologically different processes: an energetic process of wearing out in which high job demands exhaust the employee's energy, and a motivational process in which lacking resources preclude dealing effectively with job demands and foster mental withdrawal (Demerouti et al., 2001). Job resources might lead to well-being when reducing the effect of job demands.

Although all the job resources were related to engagement and burnout, the effects were the strongest for growth opportunities, organisational support, social support, and advancement. Growth opportunities affect the psychological meaningfulness attributed to jobs (Rothmann & Jordaan, 2006). Furthermore, a supportive organisational environment is associated with work engagement, because it promotes the psychological safety (Kahn, 1990). The focus in organisations should move toward engagement as engagement and disengagement are good predictors of wellness or unwellness respectively. Since job demands plays a role in the process that might lead to burnout, reducing these overloads seems reasonable. If an increasing awareness is created in the chemical industry, the first step would be to create and stimulate awareness at all levels of the organisation regarding the concept of wellness. Buy-in from management and the employees is of the utmost importance as it determines the success

of the wellness interventions. To take proactive action would mean that the skills of management and the employees should be expanded to identify potential unwellness as well as wellness. This will also promote work wellness in general.

In conclusion, it seems that the JD-R model is a useful model in managing and preventing burnout for employees in the chemical industry. A limitation of the study was that a cross-sectional design was used. Longitudinal research would have resulted in more insight into the relationship between burnout, engagement, job demands and job resources. Another limitation was that the sample was relatively small and not representative of the chemical industry.

## RECOMMENDATIONS

The *Person-Environment Fit Model* (French et al., 1982) suggests that a misfit between the requirements of the job (e.g. demands, resources) and the values, skills and traits of the individual (Cooper et al., 2001; Winefield et al., 2002) might lead to stress. The biographical characteristics of the groups should be investigated to determine if demographical factors are indicative of well-being of employees in the chemical industry as this might be utilised as indicators during the recruitment process as a proactive approach.

Future studies should also make use of larger samples as this will enhance the reliability of the study.

It is necessary to investigate the relationships between job demands, job resources and engagement and burnout in a longitudinal design as this will establish possible trends. The moderating effects of personality dispositions on engagement should be investigated.

Corville and Bernardi (1999) suggests determining and reaching optimum stress levels as managers will benefit from this. Specific interventions should be designed to address the need for focus on job resources in order to minimise burnout in the chemical industry, as the intention is to minimise stress to this so called optimum level or optimal state (Csikszentmihalyi, 1990). Although it is important to assist individual employees whose psychological well-being is affected by their work, an organisational rather than an individual approach is more likely to be effective, as most stressors were found to be at an

organisational level. A more desirable strategy is therefore to make the organisation inherently less stressful. Job demands play a central role in burnout and work engagement, thus it is necessary to implement preventive organisationally based strategies to tackle high job demands and to manage a lack of job resources.

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## CHAPTER 5

### CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

The purpose of this chapter is to draw conclusions from the three articles that formed part of this study. Conclusions are drawn in accordance with the research objectives. Furthermore, limitations of this study are discussed and recommendations are made for the chemical industry. Finally, research opportunities that emanate from this research are presented.

#### 5.1 CONCLUSIONS

Next, the conclusions of the empirical studies are drawn.

##### *Well-being of employees in the chemical industry*

The first and second objectives of this study were to assess the correlations between various components of well-being in the chemical industry and the effect these components have on the experience of affective well-being.

Affective well-being is reflected by the frequent experience of positive affects and the infrequent experience of negative affects (Diener & Larson, 1993). Affective well-being is multi-dimensional (Watson & Tellegen, 1985), can capture subtleties, complexities and changes in the experience of work (Briner, 1997), and can be measured in relation to the work domain (Warr, 1990). Lazarus and Folkman (1984) remind us that factors that influence subjective reactions must be considered in order to gain a better understanding of how work influences well-being. This led the researcher to investigate what might influence affective well-being.

Results revealed a three-factor structure of work-related affective well-being in this study. The first factor represented a cluster called general well-being, consisting of satisfaction with life, positive and negative affect, optimism, pessimism, and professional efficacy. The second factor represented pleasure and consisted of intrinsic and extrinsic job satisfaction as well as affective commitment. The third factor was called energy and represented cynicism, exhaustion, and general health. Anger-placid was combined with anxiety-comfort, as they are

closely related in Warr's model (Daniels, 2000) - which was used as basis for this research. In summary, all the other dimensions of Warr's model were measured and tested.

The pleasure cluster had the following findings: work-related psychological well-being can be operationalised as job satisfaction, according to Clegg and Wall (1981) and Evans (1969). This statement is supported by research done by Cropanzano and Wright (2001), where happiness is operationalised as job satisfaction when positive affect is present and negative affect is absent. In this research, it was found to be non-significant. The research confirms a strong relationship between extrinsic job satisfaction and intrinsic job satisfaction. In this research, a relationship between language and intrinsic job satisfaction is indicated, as well as the relation between age and affective commitment. The latter is contrary to research done by Englert (2001), which states that age is associated with normative commitment. Skari (1997) investigated the relationship between intrinsic job satisfaction and language, and found none – also contrary to this research. In this study, intrinsic and extrinsic job satisfaction related positively to affective commitment, and affective commitment did not correlate well with any of the other components, but an explanation of this occurrence might be the low alpha coefficients that were found. In this research, optimism had a high positive affective correlation and a negative correlation with negative affect, which, according to the research mentioned, might be indicative of a healthy profile. Furthermore, pessimism correlated positively with negative affect, and optimism correlated positively with positive affect. Previous research confirms this finding (Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992).

General well-being as a cluster is made up of a variety of components and had the following findings: positive and negative affect indicates well-being (Diener & Larson, 1993) and affective well-being is multi-dimensional (Watson & Tellegen, 1985; Warr, 1990). The greater the positive influences, the greater the satisfaction with life (Sirgy, 2006). As substantiated with this research a positive relationship was found between satisfaction with life and positive affect, optimism and job satisfaction. In support of this, Diener, Suh, Lucas, and Smith (1999) state that a person is as well as he perceives himself to be. The research found a high correlation with both positive and negative affect. According to Lee, Hwang, Kim, and Daly (2004), job satisfaction and burnout can predict life satisfaction. The results again support this finding, as satisfaction with life correlates positively with intrinsic and extrinsic job satisfaction, and is practically significant to cynicism and exhaustion. Health is

also negatively related to satisfaction with life. Although previous research (Fry, 1995; Mäkikangas & Kinnunen, 2003) suggests that dispositional optimism could be negatively related to burnout, this research found no correlations between the mentioned components.

Energy as a cluster could be described as burnout coupled with health. According to Ryff and Singer (1998), health is a state of well-being rather than ill-being. High levels of burnout may lead to health problems (Coetzer, 2004; Maslach, Jackson, & Leiter, 1996; Lee & Ashforth, 1990; Maslach, 1982), which correlates with the positive relationship health has with both exhaustion and cynicism – as found in this research. Negative and positive affect have a stronger relationship to burnout symptoms, i.e. cynicism and exhaustion (Pruchno & Meeks, 2004), as supported by the high correlations found in this study. Findings of a study regarding health and positive and negative affect (Casten, Lawton, Winter, Kleban, & Sando, 1997; Little, Simmons, & Nelson, 2007) corresponds with the relationship that the study found regarding the significant relationship between health and positive affect, except that health correlated negatively to positive affect, but positively to negative affect. Similar to research done by Tan and Akhtar (1998), this research found that burnout had no significant impact on affective commitment. This research found practical significance between exhaustion, cynicism and intrinsic job satisfaction, which is supported by research done by Bilge (2006).

#### *Values and career anchors of employees in the chemical industry*

The third and fourth objectives of this study were to test the psychometric properties and combine the factors as measured by the Values Scale and the Career Orientation Inventory in order to predict values and well-being for employees in the chemical industry when considering demographic variables.

Research was done (Derr, 1980; Rokeach, 1973; Schein, 1978; Super & Nevill, 1985) on career anchors and values separately, but more recent research done by Kristof (1996) highlighted the lack of consistent results due to consideration of fit along a number of dimensions simultaneously. As pointed out by Brown (1996), occupational choice is largely influenced by interest, values, capacities, and opportunities. This led the researcher to believe that values and career anchors might be clustered together to measure similar values.

Exploratory factor analyses were used to assess the Values Scale and the Career Orientation Inventory. Firstly, a simple principal components analysis was conducted. The eigenvalues and scree plots were studied to determine the number of factors. Secondly, a principal axis factor analysis with a direct oblimin rotation was conducted to determine if the factors were related, and a principal axis factor analysis with a varimax rotation was used to extract the factors (Tabachnick & Fidell, 2001).

Both the psychometric instruments originally tested for specific values and career anchors that were indicated in the factor analyses, but the factor loadings did not make sense until the researcher created new combined values, and applied the same method to the career anchors.

From the rotated factor matrix, the researcher draws the conclusion that the clustered values as measured by the Values Scale might be indicative of measuring life values; as to the cluster of career anchors as measured by the Career Orientation Inventory, which might be indicative of measuring work values.

Thus, the work and life values will measure their respective values and cannot be combined. This proves the opposite of hypothesis one of the second research article as the assumption was that the different values as measured by the Values Scales and Career Orientation Inventory could be clustered together. Brown's (1996) research, which found that work values make up life values, is also not supported by this research.

To investigate hypothesis two of the second research article, the demographics of the group of respondents were investigated, as research done by Kram (1996) indicates that knowledge about age, tenure and personality could predict career concerns. Bennett, Stadt, and Karmos (1997) compared gender trends, but their findings were not supported by this research. The only similarity that occurred was that education is shared between values and career anchors. Again, the hypothesis was proven incorrect, as the similarities are limited.

#### *Job demands and job resources, burnout and engagement, and wellness of employees in the chemical industry*

The fifth objective of this study was to determine the extent of the relationship between job demands and job resources, and burnout and engagement for employees in the chemical

industry.

The results confirmed that job resources (such as growth opportunities, organisational support and advancement) predicted engagement, whereas job demands (overload) impacted negatively on cynicism and exhaustion (both components measuring burnout).

Six internally consistent factors were extracted from the JDRS, namely organisational support, growth opportunities, social support, overload, advancement, and job insecurity. A second-order factor showed that these factors represent two higher order factors, being job demands and job resources. These results support the findings of Demerouti, Bakker, Nachreiner, and Schaufeli (2001), as stated in the Job Demands-Resources model.

The regression coefficients support the finding of Demerouti et al. (2001) that high job resources might lead to lowering the job demands, which will in effect increase engagement.

Engagement also has a positive relationship with organisational support, growth opportunities, and social support; this might be indicative of the employee who stays in the company through thick and thin (Maslach & Leiter, 1997). Growth opportunities have a relationship with advancement and social support, which make a company more attractive to work for and which provide opportunities to the engaged employee. As engagement adds to well-being, it enhances job satisfaction, motivation, and low turnover (Bakker, Demerouti, & Schaufeli, 2003; May, Gilson, & Harter, 2004; Schaufeli & Bakker, 2004). This means that engaged individuals tend to be committed to their organisations, as predicted by Blizzard (2002). This proves the first hypothesis of the third study correct.

Cynicism has a strong relationship with exhaustion. Exhaustion was related to job demands (overload) and a lack of organisational support, growth opportunities, and social support. The combination of cynicism and exhaustion might be an indicator of burnout (Corville & Bernardi, 1999). Adding weight to this conclusion, cynicism has a negative relationship with growth opportunities and advancement. A lack of growth opportunities, social support, and advancement might also increase cynicism; a lack of job resources might therefore be indicative of burnout, which proves the second hypothesis of the third study correct.

## **5.2 LIMITATIONS**

Firstly, the present study adopted a cross-sectional research design which allows a relationship between variables to be identified at one point only. Consequently, more complex forms of non-recursive linkages could not be examined. At best, these relationships could only be analysed and described. The relationships in the present study therefore serve only to set up certain patterns of the different variables being studied.

## **5.3 RECOMMENDATIONS**

### **5.3.1 Recommendations to solve the research problems**

When the chemical industry investigates well-being health should not only be considered as a physical issue. Health should also be considered in light of the psychological influence that it has on general wellness as this was one of the focus areas of the research.

Based on the results of this study, it is recommended that career anchors and values not be combined when exploring values within the wellness context. The findings of life values and work values should be investigated within the wellness framework; including the demographic characteristics of the group. Another limitation is the new factors as found and suggested by this research. The literature does lead one to explore the combining of work values and life values, but this study did not find supporting statistical recommendations. Another recommendation is to explore personality traits and investigate correlations between work values and life values and personality.

Job resources consisting of organisational support, growth opportunities, job insecurity, social support and advancement lead to well-being for the employee working in the chemical industry. As the opposite leads to unwellness, it is important for the chemical industry to pay attention to training interventions and development of employees, as individuals cannot develop themselves. The organisation could utilise the information as found in the research in conjunction with the JD-R model. The focus in organisations should move toward engagement, as engagement and disengagement are good predictors of wellness and unwellness respectively. Since job demands play a role in the process that might lead to burnout, reducing these overloads seems reasonable. If an increasing awareness is created in

the chemical industry, the first step would be to create and stimulate awareness at all levels of the organisation regarding the concept of wellness. Buy-in from management and the employees are of the utmost importance as it determines the success of the wellness interventions. To take proactive action would mean that the skills of management and the employees should be expanded to identify potential unwellness as well as wellness. This will also promote work wellness in general.

### **5.3.2 Recommendations for future research**

Further analysis of the data should be undertaken in future studies, as it will make a contribution to Industrial Psychology and the practice thereof in organisations. The structural equation modelling seems to be a potentially useful contributor to the understanding of the relationships between variables. Some of the results of this research are contradictory to previous research, which indicates a need for further investigation.

The Values Scale and Career Orientation Inventory can provide valuable information when Person-Fit information would be considered, but the personality traits should also be tested when the values and career anchors are tested.

As psychology is moving towards a positive psychological paradigm, more research can be directed towards positive concepts such as optimism. More research is needed to identify the cognitive, behavioural and social processes that underlie dispositional optimism. Previous research has shown optimism to be a powerful variable related to outcomes in organisational settings.

A longitudinal study is suggested to determine if there are any changes in work well-being in the chemical industry. Although longitudinal studies are much more difficult to achieve, such a study might further our understanding of the development of wellness and engagement, it can expand our knowledge in terms of the inclusion of other variables in the study of wellness, and longitudinal studies would be useful to track the possible differential effects of moderators at different phases of engagement, burnout and wellness.

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