

**THE ASSOCIATION BETWEEN SENSE OF COHERENCE,
EMOTIONAL INTELLIGENCE AND HEALTH BEHAVIOUR:**

A SALUTOGENIC PERSPECTIVE

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vir Alexandre



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But it is the Spirit in a man, the breath of the Almighty, that gives him understanding.

Job 32:8

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Abstract

Chronic diseases are usually the result of complex interactions between various lifestyle factors, physiological processes and societal factors. While some of these factors are not modifiable, modification of several of these factors have, to a large extent, demonstrated preventative properties against the development or further development of various chronic diseases. Health-related behaviours are modifiable factors.

Behaviour plays an important role in both the development and the management of chronic diseases. One way of investigating this role is to evaluate the impact of health-related behaviours on health. Positive health-related behaviours include eating a healthy diet, regularly engaging in physical exercise, having regular screenings and checkups, not smoking, moderate alcohol use, getting vaccinations and seat belt use. Negative health-related behaviours include eating an unhealthy diet, leading a sedentary life style, not having regular screenings and checkups, smoking, excessive alcohol use and irresponsible driving.

Various models of health-related behaviour use social cognitive factors as proximal determinants of health-related behaviours. A social cognitive factor that has received little attention in relation to health-related behaviour, that is sense of coherence (SOC), was used in this study. Although personality factors tend to be only distally associated with health-related behaviour, they do however seem to contribute to a better understanding of these behaviours. Trait emotional intelligence (EI) as a lower order personality trait was used in this study. The purpose of this study was to investigate the nature of the relationships between SOC, trait EI and health-related behaviours.

A cross-sectional, correlational research design was used. Participants were selected based on convenient and easy access. Participants completed an online questionnaire that consisted of a health behaviour survey as well as the short form of the Orientation to Life Questionnaire and the Trait Emotional Intelligence Questionnaire. The health behaviour survey assessed some aspects of people's health-related behaviour, including diet, sleep and preventive behaviours, alcohol use, exercise and smoking.

Health behaviour correlated significantly with both SOC and Trait EI. SOC and Trait EI were also significantly correlated. When controlling for a third variable, neither SOC nor



trait EI correlated significantly with health behaviour. Although none of the predictors made significant contributions to the prediction of health behaviour, the basic regression model reached statistical significance. Trait EI made a significant contribution to the prediction of health behaviour in a more parsimonious regression model, which also reached statistical significance.

Key words: Salutogenesis, Salutogenic model, Health-related behaviour, Sense of coherence, Trait emotional intelligence, Chronic disease, Correlational research, Orientation to Life Questionnaire, Trait Emotional Intelligence Questionnaire, Health Behaviour survey

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Chapter 1

Introduction

The dissertation is the final embodiment of your research project. It is the documentation of your thinking, the decisions that you took during the research process and even more importantly, it is a reconstruction of the logic of your research.

(Mouton, 2001, p.113)

The biomedical model and modern medicine are primarily steeped in a pathogenic paradigm (Antonovsky, 1987; Strümpfer, 1990) or an illness ideology (Maddux, Snyder & Lopez, 2004) in that it primarily seeks to investigate and explain the origins of disease.

The pathogenic paradigm aims to determine and explain the cause of abnormality, disorder, maladjustment, dysfunction, disease, risk factors and defects in order to restore homeostasis when the equilibrium is disturbed (Antonovsky, 1987; Maddux et al., 2004; Strümpfer, 1990). Subsequently, health is defined 'as the absence of disease and its concomitant symptomatology' and the result of the restoration of order following disorder that was caused by stressors or pathogens (Lyddon, 1987, p.380). Health status is dichotomised into normal versus abnormal, healthy versus diseased and adjusted versus maladjusted (Antonovsky, 1987; Maddux et al., 2004). Individuals are isolated from their psychological, social and cultural environments to the extent that researchers and practitioners concentrate on the disease or disorder (Antonovsky, 1987). Subsequently the individual is viewed as a passive recipient of disease or disorder and the health care system is viewed as the expert source responsible for recovery and cure (Bengel, Strittmatter & Willmann, 1999; Maddux et al., 2004).

Chronic health and disease processes are, however, not adequately conceptualised within the pathogenic paradigm. First, a categorical approach (i.e., healthy or diseased,



normal or abnormal) is not suitable for the conceptualisation of chronic health and disease processes. Although individuals with chronic diseases are classified as chronically diseased, they cannot necessarily be classified as chronically ill (i.e. constantly experiencing the effects of the disease). Second, since individuals with chronic diseases cannot necessarily be classified as chronically ill, the fixation with disorder, dysfunction, disease, abnormality, maladjustment and risk factors is inappropriate. Finally, the emphasis on active adaptation and management regarding chronic diseases does not fit in with the view that individuals are passive recipients of disease.

It is therefore necessary to find an alternative approach to conceptualise chronic health and disease processes. The salutogenic model, conceptualised by Antonovsky (1987), presents a more accurate and realistic approach to the conceptualisation of chronic health and disease processes. The model uses a dimensional approach to health status, that is, health and disease processes are considered on a continuum (Antonovsky, 1987). The model is interested in the origins of wellbeing and health and therefore not only regard risk factors but particularly consider salutary factors. The model emphasizes the importance of the active involvement of the individual in the management and adaptation of stressors.

1.1 Research topic

The challenge is to identify salutogenic constructs that can be validly associated with health-related behaviours. Various constructs, including sense of coherence (Antonovsky, 1987), hardiness (Kobasa, 1979), self-efficacy (Bandura, 1977) and locus of control (Rotter, 1966), are available to explain salutogenesis, that is, 'successful resolution of stressors and maintenance of or return to health' (Antonovsky, 1991, p.69). For the purpose of this study sense of coherence (SOC) was utilized because it is a culturally-free construct and it comprises a distinct combination of cognitive, behavioural and motivational components.

The relationship between SOC and health-related behaviours has not been clearly established yet. However, there is some evidence that suggests that SOC is a predictor of some health-related behaviours (Freire, Sheiham & Hardy, 2001; Sandén-Eriksson, 2000).

Another possible factor that can be associated with health-related behaviours is emotional intelligence (EI). Although little research has been done regarding the relationship



between EI and health-related behaviours, results do suggest an association (Austin, Saklofske & Egan, 2005; Trinidad & Johnson, 2002; Trinidad, Unger, Chou & Johnson, 2004).

Both these constructs are resiliency factors and therefore fit within a salutogenic perspective and appear to play a role in active practising of health-related behaviours. The research question therefore is whether adults' health behaviour can be meaningfully associated with SOC and trait EI.

1.2 Rationale

The overall aim is to determine whether SOC and trait EI can be used as predictors of health-related behaviours. This knowledge will help us understand better why people display certain health behaviours and not others, as well as who displays which kinds of health behaviours. It will provide insight in developing more effective intervention programmes. Modifying health behaviour successfully results in several beneficial consequences such as deaths due to chronic diseases being significantly reduced. Additionally, individual longevity, life expectancy as well as quality of life are increased significantly. A healthier population will also contribute to a decrease in annual costs associated with chronic diseases (Taylor, 2003).

1.3 Research design and methodology

This was an exploratory cross-sectional correlational study of a quantitative nature regarding the association between adults' health-related behaviours, SOC and trait EI. Health-related behaviours, SOC and trait EI were operationalised through self-report measures. A nonprobability sampling technique, namely convenience sampling, was used. Participation was voluntary and subject to informed consent. Participants completed an online questionnaire that was hosted on a secure website. All information was treated confidentially and participants remained anonymous. The data was analysed using SPSS for Windows (version 12; SPSS Inc., 2003) and the interpretation of the results was embedded in the psychological theories and perspectives employed in this study.



1.4 Chapter overview

The purpose of this chapter was to illustrate the development of the idea for the dissertation, present the research topic as well as the rationale of the study, and give a general indication of the research design and methodology.

The second chapter will give an overview of relevant literature and existing scholarship. Key concepts and theories pertaining to health and disease processes, chronic disease, health-related behaviour, salutogenesis, SOC and trait EI, will be defined and discussed.

The third chapter will explain the research design and methodology of the study. With regard to the research design, the research question, hypotheses, conceptualisation of the study, operationalisation of the constructs and sample design, will be described. With regard to the methodology, the data collection, capturing, editing and analysis, will be described. The quality of the data will be briefly evaluated.

The fourth chapter will report the main results of the statistical analyses. The fifth chapter will consist of a discussion of the results and limitations of the study. The chapter will be ended with concluding thoughts and recommendations for further research will be made.

Chapter 2

Literature and scholarly review

A literature review is based on the assumption that knowledge accumulates and that we learn from and build on what others have done.

(Neuman, 2000, p.445)

Behaviour plays an important role in both the development and the management of chronic diseases. The purpose of this chapter is to review and demarcate the literature and body of accumulated scholarship that are relevant.

First, health and disease are conceptualised in a salutogenic context. Second, the salutogenic conceptualisation of health and disease processes will be applied to the specific case of chronic diseases.

Third, health-related behaviours will be defined and discussed. Fourth, factors that are highly associated with various health-related behaviours will be discussed. Particular attention will be given to sense of coherence (SOC) and trait emotional intelligence (EI) as determinants of health-related behaviours. Previous research relating to the association between health-related behaviour, SOC and trait EI respectively, will be reported and reference will be made to the instrumentation that has been used to evaluate these associations.

2.1 Conceptualisations of health and disease processes

Lay definitions of health and disease processes suggest that health is a multidimensional concept. Lay definitions of health include medical, social, physical, psychological, behavioural



and economical aspects (Larson, 1999). People, for example, perceive themselves as healthy when they are able to continue with their daily lives or when they are physically fit and strong or when they practice healthy habits in terms of eating, sleeping and smoking (Bowling, 2002).

Scholarly conceptualisation of health and disease processes vary according to the particular philosophical perspective taken. In general, two broad categories of definitions of health and disease processes can be distinguished.

The first category of definitions dichotomises health and disease processes into healthy and diseased, normal and abnormal, and adjusted and maladjusted (Antonovsky, 1987; Maddux et al., 2004). Consequently, health is considered as the norm or an ideal where disease is absent. Disease is seen as a deviation from this norm or the ideal that can only be restored by eliminating the pathology (Brannon & Feist, 2004; Lyddon, 1987). The biomedical model is an example of a dichotomised perspective on health and disease processes that seeks to investigate and explain the origins of disease.

The second category of definitions places health and disease processes on a continuum, where better health is a goal to continuously strive for. Furthermore, health is considered as multidimensional (Brannon & Feist, 2004) and a function of biological, psychological and social factors. The salutogenic model is an example of a continuum conceptualisation of health and disease processes that seeks to investigate and explain the origins of wellbeing and health.

2.1.1 A salutogenic conceptualisation of health and disease processes

The salutogenic model differs from traditional perspectives on health and disease processes in that this model is concerned with salutogenesis (*salūs = wellbeing* and *genesis = origin*) rather than with pathogenesis (*pathos = suffering* and *genesis = origin*). The model is based on the fundamental assumption that stress and therefore disease is omnipresent and not an unusual occurrence and that the human system is inherently flawed. Heterostasis, senescence and increasing entropy are prototypical characteristics of any living entity (Antonovsky, 1987, 1990a, 1990b, 1994b, 1996).



The following principles of the salutogenic model further clarify the model's conceptualisation of health and disease processes. First, health and disease processes are located on a health ease/dis-ease continuum rather than as a healthy-diseased dichotomy (Antonovsky, 1987). A continuum approach allows for a more accurate and realistic view of any individual's health status. Antonovsky describes the concept of health ease/dis-ease in terms of the levels of order in various systems (i.e. physical, psychological, emotional and social). Individuals located towards the health ease pole of the continuum manifest a given level of order, whereas individuals located towards the health dis-ease pole of the continuum manifest a given level of disorder in these systems (Antonovsky, 1994a).

Second, when health and disease processes are considered from a salutogenic perspective, the emphasis is on the individual as a whole (Antonovsky, 1987, 1996). A holistic approach facilitates greater understanding of the etiology (Antonovsky, 1987) and personal experience of health and disease processes in that all systems (i.e., biological, psychological and social) are considered simultaneously. A holistic approach also promotes better decision making regarding treatment and ultimately for health promotion.

Third, health and disease processes are associated with both salutary factors and risk factors. Salutary factors are not merely low or lowered risk factors but are negentropic factors that actively increase the likelihood of health, that is, movement towards the health ease pole of the continuum (Antonovsky, 1987, 1990b, 1996).

Fourth, health and disease processes are a function of stressors. Stressors give rise to conditions of tension which can have either a pathogenic, neutral or salutogenic result depending on the resolution of the tension (Antonovsky, 1987). Inefficient resolution of tension leads to stress or disease (Antonovsky, 1990b).

Fifth, when health and disease processes are considered from a salutogenic perspective the emphasis is on an active adaptation approach to treatment rather than a passive curative approach (Antonovsky, 1987).

From a biomedical perspective a salutogenic conceptualisation of health and disease processes illuminates the deviant case because it is interested in explaining why some so called 'at risk' individuals do not develop a disease. A salutogenic conceptualisation of health and disease processes is particularly helpful in the understanding of the biopsychosocial



processes involved in chronic diseases.

2.2 Conceptualisation of chronic health and disease processes

Chronic diseases are long-lasting conditions that generally involve complex and lengthy preclinical phases. Chronic diseases are mostly not curable, that is, the individual can almost never return to a pre-diseased state and therefore chronic diseases require continuous management (Leventhal, Halm, Horowitz, Leventhal & Ozakinci, 2005). Examples include cardiovascular diseases, diabetes, obesity, osteoporosis, asthma, cancer, arthritis, dental and periodontal diseases, epilepsy, and multiple sclerosis.

Chronic diseases are usually the result of complex interactions between various lifestyle factors (e.g., diet, smoking, sedentary lifestyle etc.), physiological processes (e.g., age, gender, genetics, blood pressure, blood cholesterol levels etc.) and societal factors (e.g., socioeconomic status, culture etc.; Leventhal et al., 2005; World Health Organization, 2003). While some of these factors are not modifiable (i.e., age, gender and genetics), modification of several of these factors have demonstrated preventative properties against the development or further development of various chronic diseases (see for example Grundy, 1999; Lee, Popkin & Kim, 2002; Puska, Vartiainen, Tuomilehto, Salomaa & Nissinen, 1998).

Various of these modifiable factors are prevalent in South Africa (Heart Foundation of South Africa, n.d.):

- Approximately 7 million people in South Africa smoke;
 - It is estimated that more than 40% of South Africans' total energy intake is commonly in the form of fat of which more than 50% is saturated;
 - It is estimated that 80% of westernised South Africans have raised blood cholesterol levels and approximately 6.3 million have hypertension;
 - Approximately 56.6% of all women in South Africa have a body mass index greater than 25, that is, they are overweight. Among men this statistic is lower, at 29.2%.
-



Sedentary lifestyles contribute to obesity and being overweight.

The impact of diseases is frequently only measured by mortality. However, in the case of chronic diseases it is important to also consider the impact of these diseases in terms of non-fatal health outcomes (Murray, Salomon & Mathers, 2000). Chronic diseases frequently lead to reduced quality of life and reduced activity levels due to disability (Rugulies, Aust & Syme, 2005). From this discussion of chronic health and disease processes it is evident that the conceptualisation of chronic diseases requires an approach completely different from the traditional conceptualisations of health and disease processes.

2.2.1 A salutogenic conceptualisation of chronic health and disease processes

Conceptualising chronic health and disease processes salutogenically seems to be appropriate, given the relatively noncurative nature, complex etiology and treatment, and diverse impact of these processes. The various principles of the salutogenic model will now be applied to chronic health and disease processes to illustrate this appropriate fit.

First, understanding the health and disease processes of chronic diseases is much more convoluted than for acute diseases. Individuals with chronic diseases can never return to the pre-diseased state (i.e., not-diseased) as with acute diseases. Nevertheless, although individuals with chronic diseases are classified as chronically diseased, they can not necessarily be classified as chronically ill (i.e. constantly experiencing the effects of the disease). They may use chronic medication and periodically avail themselves of medical treatment but they can still continue with their everyday life for the majority of the time (Radley, 1994). A continuum approach is therefore especially appropriate for the conceptualisation of chronic diseases.

Second, chronic diseases are systemic in that they are the result of combinations of biological, psychological, and social factors and they markedly affect various biological, psychological and social systems (Leventhal et al., 2005; Taylor, 2003). It is therefore essential to adopt a holistic approach for both etiology and treatment.

Third, on the one hand research has indicated that several factors (i.e., risk factors) are highly associated with the development and increased likelihood of the prevalence of



chronic diseases (Brannon & Feist, 2004; Rugulies et al., 2005; Sarafino, 2005; Stroebe, 2000). These factors are however neither necessary nor sufficient for the development of a particular chronic disease (Rugulies et al., 2005). The disease could develop in the absence of the particular factor or it might not occur even though the factor is present.

On the other hand research has also identified various factors (i.e., salutary factors) that serve as safeguards against the development and increased likelihood of the prevalence of chronic diseases (Adler & Matthews, 1994; Belloc & Breslow, 1972; Brannon & Feist, 2004; Ogden, 2000). Similar to risk factors, salutary factors are not necessary nor sufficient to prevent the development of chronic diseases. Disease could develop despite the presence of a seemingly salient salutary factor.

In a biomedical context individuals are generally informed of their *attributable* risk, that is, the risk due to the various risk factors involved. In a salutogenic context individuals are informed and reassured of their *contributable gains*, that is, the gains due to those factors that act protectively.

Fourth, chronic health and disease processes are a function of various stressors. Although all stressors need to be resolved efficiently, particular mention is made of stressors that are frequently dismissed as inevitable and consequently not efficiently resolved:

- Individuals are frequently unaware of asymptomatic stressors such as hyperglycaemic blood sugar levels, high blood pressure, and high cholesterol levels. Inefficient resolution of these physiological stressors may lead to prolonged patterns of pathogenic processes and consequently increase the risk for disease.
 - Availability of resources declines with age, therefore increasing the likelihood of inefficient tension resolution of presented stressors. Thus aging is a stressor for chronic diseases.
 - Side effects of treatments may also pose as stressors. Inefficient resolution of conditions of tension caused by adverse side effects of treatments may cause further stress and distress increasing the impact of disease.
 - Chronic disease itself poses as a stressor that may give rise to high levels of emotional distress which in return may, due to inefficient resolution, increase the impact of
-



disease.

Fifth, chronic diseases cannot necessarily be approached on a curative basis because the underlying pathology cannot be eliminated. Consequently, theories of successful coping and approaches of active adaptation and management of chronic disease are required (Antonovsky, 1987; Leventhal et al., 2005; Radley, 1994; Taylor, 2003). Active adaptation and management strategies of chronic diseases are primarily targeted at behavioural and environmental/socioeconomical aspects. The next section will specifically consider the behavioural aspects involved in chronic diseases.

However, before the behavioural aspects of chronic diseases are discussed, the issue of prevention as it applies to chronic health and disease processes is explained. Prevention can be aimed at three different levels, namely, a primary, secondary, and tertiary level. At each of these levels prevention is a function of complexity and holism of chronic health and disease processes. Prevention strategies are therefore also better conceptualised from a salutogenic perspective.

Primary prevention involves minimising risk factors to prevent disease development. This level of prevention is a very cost-effective, affordable, and sustainable strategy with which to approach the increasingly prevalent public health problem of chronic diseases (World Health Organization, 2003). Examples of primary prevention include following a healthy, balanced diet and not smoking.

Secondary prevention involves identifying and attending to already existing symptomatic and asymptomatic risk factors to prevent, hamper, or reverse further development of the disease. Examples of secondary prevention include active management of high blood pressure or raised blood cholesterol levels by means of medication, regular screenings, diet, nonsmoking, and/or exercise.

Tertiary prevention involves treatment, management, and rehabilitation after the disease has set in. Examples of tertiary prevention include complying with medical regimens such as a healthy diet, chemotherapy, or regular exercise (Ogden, 2000; Sarafino, 2002; Stroebe, 2000).



2.3 Conceptualisation of health-related behaviours

The significance of health-related behaviours in the etiology and management of chronic health and disease processes has already been referred to. Here I will distinguish between kinds of health-related behaviours and kinds of determinants of these behaviours.

2.3.1 Demarcation of health-related behaviours

Kasl and Cobb (1966) makes a distinction between three kinds of health-related behaviours, based on the motivation for the behaviour, which is associated with the three levels of prevention (i.e., primary, secondary and tertiary). The three kinds of behaviours are *health* behaviour, *illness* behaviour, and *sick-role* behaviour.

First, health behaviour relates to primary prevention and is undertaken in the absence of disease with a view to maintaining and improving health. Second, illness behaviour relates to secondary prevention and is motivated by the need to identify the source of symptoms experienced as well as to find a suitable remedy. Third, sick-role behaviour relates to tertiary prevention (i.e., after a diagnosis has been made) and is driven by the desire to recover and restore health (Kasl & Cobb, 1966). All three kinds of behaviour (i.e., health, illness and sick-role) are salient factors of active adaptation and management strategies of chronic diseases.

The manner in which health-related behaviours may impact on health is generally portrayed in three ways. Health-related behaviours may have a direct or indirect impact, an immediate and /or a long term impact, and a positive or negative impact on health (Carmody, 1997). For the purpose of this study I will particularly focus on the positive or negative impact of health-related behaviours on health as empirical research also highlights this classification of these behaviours.

A distinction is made between positive health-related behaviours or health-protective behaviours and negative health-related behaviours or health-threatening behaviours based on the impact of these behaviours. Positive health-related behaviour is conceptualised as behavioural immunogens and is activities performed to prevent disease and preserve or enhance health (Bernard & Krupat, 1994; Carmody, 1997; Ogden, 2000; Sarafino, 2002).



Positive health-related behaviours include, for example, eating a healthy diet, regularly engaging in physical exercise, having regular screenings and checkups, not smoking, moderate alcohol use, getting vaccinations, and seat belt use.

Negative health-related behaviour is conceptualised as behavioural pathogens and involves activities that impact negatively on health (Carmody, 1997; Ogden, 2000; Sarafino, 2002). Negative health-related behaviours include, for example, eating an unhealthy diet, leading a sedentary life style, not having regular screenings and checkups, smoking, excessive alcohol use, and irresponsible driving.

Measures of health-related behaviours

Various general self-report measures of health-related behaviours are available, including the Health Behaviour Checklist (Vickers, Conway & Hervig, 1990), the Health Practices Index (Steptoe et al., 1994), the Lifestyle Questionnaire (Flora Institute, n.d.-b) the Health and Behaviour Survey (Steptoe & Wardle, n.d.), and the Behavioral Risk Factor Surveillance System State Questionnaire (Centres for Disease Control and Prevention, 2004). Some of these measures are however intended for personal or telephone interview data collection, whereas others are intended for self-assessments rather than research purposes. Measures that are suitable for survey type research generally consist of statements that are rated on a scale (e.g., total agreement to total disagreement).

Although these measures generally assess a wide range of health-related behaviours the sample of behaviours included are not exhaustive. Health-related behaviours that are frequently assessed in these measures, include smoking, alcohol consumption, diet, physical exercise, seat belt use, and sleeping habits (Steptoe et al., 1994; Vickers et al., 1990). Social desirability bias is, however, a significant threat to the validity of these self-report measures (Johnston, French, Bonetti & Johnston, 2005).

Results from factor analytical studies have shown that health-related behaviours are multifactorially structured (Booth-Kewley & Vickers, 1994; Krick & Sobal, 1990; Mechanic, 1979; Røysamb, Rise & Kraft, 1997; Vickers et al., 1990). Agreement has, however, not been reached regarding the number of, the nature of, or the composition of these factors. Health-related behaviours have been broadly classified as preventive or health-enhancing



and risk taking or health threatening. This corresponds with the earlier distinction between positive and negative health-related behaviours that is based on the impact of these behaviours on health. Subsequent factor analyses rendered between four and three factors and consisted of wellness behaviours, accident control, traffic risk and substance risk in one study (Booth-Kewley & Vickers, 1994; Vickers et al., 1990) and addiction, high action and protection in another study (Røysamb et al., 1997). On a first order factorial level the actual behaviours (i.e., smoking, diet, seat belt use, alcohol consumption etc.) are clustered under the specific dimensions.

An individual's inclination to enact certain health-related behaviours is interdependently influenced by various aspects. Health-related behaviours are, for example, frequently undertaken for reasons completely unrelated to health (e.g., attraction, pleasure). Although the following list is not exhaustive, determinants of health-related behaviours include demographic, social, emotional, personality, cognitive and biological factors, personal values, habits, perceived symptoms as well as factors relating to access to medical care. It is clear that intervention cannot be aimed at only one of these aspects. The individual as a whole as well as the superordinate systems that encompass the individual should be considered simultaneously.

2.3.2 Predictors of health-related behaviours

Predictors of health-related behaviours can either be proximal and have a direct influence on health-related behaviours or be distal and have an indirect influence on health-related behaviours through the proximal factors (Sutton, 2005). Cognitive predictors are especially prominent in various models of health-related behaviour such as the health belief model, the theories of reasoned action and planned behaviour, and the self-efficacy model of health behaviour. Personality predictors seem to be more distal affecting health-related behaviour primarily through more proximal factors (Trobst et al., 2000).

Cognitive predictors include aspects such as risk awareness, perceived health risk, perceived efficacy of behaviours, perceived social pressures, self-efficacy, behavioural control, intention, health locus of control, personal goals, attitudes, and beliefs (Carmody, 1997; Conner & Norman, 1996; Ogden, 2000; Sutton, 2005). Various of these factors are



considered social cognitive factors that are acquired through socialization, and they facilitate understanding of individual social behaviours in social contexts (Conner & Norman, 1996). Social cognitive factors are generally considered more likely to impact on health-related behaviours because of the amendability of the cognitive processes involved. Examples of cognitive processes include plans, goals, and strategies (Trobst et al., 2000).

Personality and individual difference predictors that have been associated with health-related behaviours include personality traits (e.g., conscientiousness, neuroticism, extraversion, agreeableness, openness to experience, hostility), Type A personality, and depression (Adler & Matthews, 1994; Booth-Kewley & Vickers, 1994; Carmody, 1997). Personality factors are not as amendable, due to their more enduring nature that gives rise to more entrenched behavioural styles. Personality factors are, however, useful in identifying individuals that are at higher risk for developing chronic diseases (Trobst et al., 2000).

Two factors that have only recently received attention as determinants of health-related behaviour but that have showed promising results despite limited research are SOC and trait EI. SOC is a cognitive construct with emotional and social aspects and trait EI is a trait/dispositional construct.

2.3.3 Sense of coherence as a predictor of health-related behaviours

Even though there are several constructs that endorse a salutogenic viewpoint such as self-efficacy, hardiness and locus of control, Antonovsky considered SOC as the core construct of the salutogenic model. He argued that although all these constructs have common components SOC is a distinct synthesis of cognitive, behavioural, and motivational components that makes it unique. He further argued that SOC is a culturally-free construct because it depends on life experience and does not prescribe the nature of the coping process (Antonovsky, 1996).

Antonovsky derived the SOC concept as a common factor to all generalised resistance resources (GRRs). GRRs facilitate resolution of tension that arises when we are confronted with stressors. A stressor is any 'stimulus which poses a demand to which one has no ready-made, immediately available, and adequate response' (Antonovsky, 1990b, p.74). Inefficient resolution of tension increases the likelihood of a pathogenic outcome such



as stress or disease. Stress is therefore not a result of the mere presence of stressors but rather of inadequate resolution of tension (Antonovsky, 1990b). GRRs, however, facilitate efficient resolution of tension by providing feedback which enables cognitive, instrumental, and emotional comprehension of the world (Antonovsky, 1990a, 1990b, 1996) and subsequently results in salutogenic outcomes. GRRs are therefore described as phenomena that strengthen our repertoire of resources that enable us to deal with life experiences. GRRs are defined as:

propert[ies] of a person, a collective or a situation which, as evidence or logic has indicated, facilitate successful coping with the inherent stressors of human existence (Antonovsky, 1996, p.15).

Over time these properties manifest as SOC, which is ultimately considered as the 'major determinant' of the status of an individual on the health ease/dis-ease continuum (Antonovsky, 1987, p.15). GRRs include factors such as physical and biochemical conditions, social support, commitment, socioeconomic status, wealth, cultural norms and coherence and various individual characteristics including ego identity, skills and coping strategies, knowledge and intelligence (Mentzer & Snyder, 1982; Strümpfer, 1990).

SOC is defined as:

a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that the stimuli deriving from one's internal and external environments in the course of living are structured, predictable and explicable; the resources are available to one to meet the demands posed by these stimuli; and these demands are challenges, worthy of investment and engagement (Antonovsky, 1987, p.19).

From the definition it is clear that SOC has three core, interrelated components namely comprehensibility, manageability, and meaningfulness (Antonovsky, 1987). A strong SOC is associated with high levels of all three components. GRRs play a necessary part in the experience of these components through sets of consistent, balanced, and participated life experiences (Antonovsky, 1987).



Although SOC as a whole is necessary for successful coping Antonovsky considered meaningfulness as the most important of the three components. He emphasized meaningfulness because it facilitates understanding and the obtainment of resources. Manageability is considered subordinate to comprehensibility because it is dependent on comprehensibility (Antonovsky, 1987).

The sense of comprehensibility

Comprehensibility refers to the extent to which a person is able to cognitively comprehend perceived stimuli (internal or external). People with high comprehensibility will be able to perceive stimuli as ordered, consistent, structured, and clear. High comprehensibility is associated with the expectation that stimuli are predictable. In the case of unexpected stimuli the person with high comprehensibility will expect that the stimuli will be orderable and explicable (Antonovsky, 1987).

The sense of manageability

High manageability is associated with the perception that adequate resources are available to stand up to the challenges of stimuli. These resources can either be under the person's own control or under the control of a legitimate other. Legitimate others include anybody whom we feel safe to trust such as a spouse, friends, colleagues, and a physician. Low manageability is associated with a feeling of victimisation and unfair treatment (Antonovsky, 1987).

The sense of meaningfulness

Meaningfulness refers to the extent to which a person is emotionally able to make sense of perceived stimuli. This component represents the motivational aspect of SOC. High meaningfulness is associated with commitment and engagement. Stimuli are perceived as challenges and worthy of investing energy therein (Antonovsky, 1987).

Although the components are theoretically inextricable they can empirically be individually classified as either high or low. Cases where all components are either high or low denote stable world views. Any combination of low comprehensibility and high manageability is in



Antonovsky's opinion fairly rare (see Antonovsky, 1987, for a discussion). Combinations of high comprehensibility and low manageability will most likely result in some form of change: either decreased comprehensibility or increased manageability depending on the status of the sense of meaningfulness (Antonovsky, 1987).

Low meaningfulness is necessarily associated with movement towards a low SOC despite an initial high sense of comprehensibility and manageability. Contrary though, a high sense of meaningfulness can most probably result in a high SOC despite an initial low sense of comprehensibility and manageability (Antonovsky, 1987). This illustrates the centrality of meaningfulness as a component of SOC.

SOC is considered a dispositional orientation or frame of mind rather than a personality trait or type. This allows for much more flexibility and openness regarding behavioural tendencies preventing limitable, predetermined behavioural classifications that could handicap coping (Antonovsky, 1990a).

SOC starts developing during childhood and eventually stabilises sometime during young adulthood approximately when we reach the third decade (Antonovsky, 1990a, 1994a). Theoretically Antonovsky hypothesised that SOC will remain fairly constant throughout adulthood with only minor changes as a result of major life events. Radical changes are unlikely especially from a weak SOC to a significantly stronger SOC. Individuals with a weak SOC are expected to display an increasingly weakening SOC due to the reciprocal deterioration in health and SOC (Antonovsky, 1994a).

Development of a strong SOC is stimulated by three kinds of life experiences in association with GRRs. First, a high sense of comprehensibility is stimulated by the experience of consistency in life. Second, a high sense of manageability is particularly enhanced by balanced underload-overload life experiences. Third, participation in socially valued decision-making enables the individual to ascribe meaning to life experiences. These life experiences are mainly a function of factors such as social and family structure, culture, occupation, gender, ethnicity, and genetics. Individuals are, however, still able to exercise some choice in the matter by responding in a proactive manner (Antonovsky, 1987, 1996).



Measures of sense of coherence

Antonovsky (1987) developed the Orientation to Life Questionnaire (OLQ) to operationalize SOC. The OLQ is a self-report measure of which eleven items assess the comprehensibility dimension, ten items assess the manageability dimension, and eight items assess the meaningfulness dimension. Factor analyses have however suggested that these dimensions do not manifest as different factors, instead the scale presents a unifactorial structure (Antonovsky, 1994a).

The scale was specifically developed to be universally meaningful and applicable across culture, gender, age, and social class (Antonovsky, 1994a). The OLQ was originally developed in Hebrew and subsequently in English but has since been translated to a number of different languages including Afrikaans and Tswana (Antonovsky, 1994a; Carstens & Spangenberg, 1997). Numerous studies have given support for the validity and reliability of the scale. More detail of the psychometric properties of the scale will be given in Chapter 3.

Research on sense of coherence and health-related behaviours

Studies that have investigated the significance of SOC as a predictor of health-related behaviour are limited, consequently this relationship has not been clearly established. Several studies have suggested a positive relationship between SOC and health-related behaviours (Freire et al., 2001; Hassmén, Koivula & Uutela, 2000; Sandén-Eriksson, 2000; Savolainen et al., 2005). All the studies discussed below utilized the short form (13-item) of the OLQ.

Studies that have obtained results of a direct positive correlation investigated associations between SOC and physical exercise frequency (Hassmén et al., 2000; Kuuppelomäki & Utriainen, 2003), patterns of dental attendance (Freire et al., 2001), and oral health behaviours (Savolainen et al., 2005). Individuals that exercised regularly had a stronger SOC than individuals that did not exercise regularly (Hassmén et al., 2000; Kuuppelomäki & Utriainen, 2003). Better oral health status and better dental attendance patterns are associated with a stronger SOC (Freire et al., 2001). A more favourable oral health impact profile (OHIP) is associated with a stronger SOC suggesting that SOC could be a determinant of oral health including oral health behaviours. The OHIP is a comprehensive



measure of impacts relating to general oral conditions as well as impairments (Savolainen et al., 2005).

Another study found that the positive relationship between SOC and health-related behaviour is mediated by a third variable. SOC showed a positive correlation with active management of type-2 diabetes with self-assessed health as a mediating variable. Regarding the impact of behavioural factors on treatment outcomes, findings suggest that low glycolysed haemoglobin levels are strongly correlated with active management and emotional acceptance. Regarding the impact of SOC on treatment outcomes, findings suggest that favourable self-assessed health is strongly associated with SOC and low glycolysed haemoglobin levels (Sandén-Eriksson, 2000).

2.3.4 Trait emotional intelligence as a predictor of health-related behaviours

The conceptualisation of the construct emotional intelligence evolved considerably since the initial notions generated by Darwin (as cited in Bar-On, 2001). Darwin investigated the role that emotional expression plays in adaptive behaviour.

During the first half of the twentieth century the construct was utilised to describe the ability to act competently in a social context and was referred to as *social intelligence* (Thorndike, as cited in Bar-On, 2001). In the second half of the twentieth century the notion of *personal intelligence* developed from the theory of multiple intelligences. Personal intelligence refers to two components regarding emotion. It consists of *intrapersonal intelligence*, that is, the ability to access one's own feeling life and *interpersonal intelligence*, that is, the ability to access other people's feeling life (Gardner, as cited in Salovey, Caruso & Mayer, 2004).

Interpersonal intelligence closely resembles social intelligence. Research on intrapersonal intelligence included investigations of theoretically related constructs including alexithymia, emotional awareness, and psychological mindedness (Bar-On, 2001). Alexithymia is characterised by the difficulty experienced by a person to identify, discriminate and describe emotional states in him- or herself and in others and by an externally oriented style of thinking (Carr, 2004; Parker, Taylor & Bagby, 2001; Saklofske, Austin & Minski, 2003). Emotional



awareness is considered a cognitive skill that refers to individuals' 'capacity to recognise and describe emotions in themselves and others' (Carr, 2004, p.133). Psychological mindedness is characterised by an awareness of the cognitive, affective and behavioural factors involved in life experiences as well as a motivation to understand it better (Carr, 2004).

These early conceptualisations gave rise to development of two emotional intelligence constructs namely ability EI and trait EI. The distinction is based on the different measurement approaches of the constructs and not the theoretical content of the models (Petrides & Furnham, 2000). Different measurement approaches result in different operationalisations of the constructs.

Ability EI is operationalised through maximal performance measures (i.e., responses to items are either correct or incorrect) as an ability that resembles traditional intelligences, such as verbal and spatial intelligence (Mayer, 2001). Trait EI is operationalised through typical performance measures (i.e., self-report) as a set of dispositions and self-perceived abilities that resembles personality factors (Petrides & Furnham, 2001). The current study is primarily interested in trait/dispositional-like characteristics, consequently I will now review the trait model of EI in more detail.

Trait EI 'refers to a constellation of behavioral dispositions and self-perceptions concerning one's ability to recognize, process and utilize emotion-laden information' (Petrides, Frederickson & Furnham, 2004, p.278). The trait EI model encompasses 15 behavioural dispositions and self-perceived abilities (see Table 2.1) which are conceptualised as facets rather than factors because of the expected relatedness between them (Petrides & Furnham, 2001). Aspects of social intelligence and personal intelligence are incorporated in the self-perception facets of the trait EI construct (Petrides, Frederickson & Furnham, 2004). Trait EI increases with age and starts to plateau after the fifth decade (Bar-On, 2000).

Individuals that score high on the trait EI facets reflect confirmation of their behavioural disposition and a firm belief in their ability to perceive, process, regulate, and apply emotion-laden information. Trait EI can therefore be considered a construct that strengthens our repertoire of life experience by facilitating successful coping with stressors through efficient resolution of tension. Consequently, high trait EI is generally associated with more

Table 2.1: *The 15 facets of trait EI*

Facet	Description
Adaptability	flexible and willing to adapt to new conditions
Assertiveness	forthright, frank and willing to stand up for their rights
Emotion perceptions (self and others)	clear about their own and other people's feelings
Emotion expression	capable of communicating their feelings to others
Emotion management (others)	capable of influencing other people's feelings
Emotion regulation	capable of controlling their emotions
Impulsiveness (low)	reflective and less likely to give in to their urges
Relationship skills	capable of having fulfilling personal relationships
Self-esteem	successful and self-confident
Self-motivation	driven and unlikely to give up in the face of adversity
Social competence	accomplished networkers with excellent social skills
Stress management	capable of withstanding pressure and regulating stress
Trait empathy	capable of taking someone else's perspective
Trait happiness	cheerful and satisfied with their lives
Trait optimism	confident and likely to "look on the bright side" of life

Source: Petrides, Furnham & Frederickson, 2004

psychological stability. Consequently, trait EI presents as a GRR that helps to explain salutogenesis and fits well in the salutogenic model.

Trait emotional intelligence and personality

Constructs that are theoretically associated should show convergence, that is, correlate moderately with each other (Trochim, 2002), however too high correlations call into question the distinctness of these constructs. The distinctness of trait EI is illustrated in this section.

The distinctness of constructs can be determined by investigating the discriminant validity of the constructs. One way to determine discriminant validity of a construct is to establish whether the construct can be located as a distinct factor in the factor spaces defined by theoretically associated constructs (Petrides & Furnham, 2001).

A construct that shows discriminant validity is also highly likely to show incremental validity, that is, demonstrate explanatory power above that of other theoretically associated



constructs (Petrides, Frederickson & Furnham, 2004; Saklofske et al., 2003). Incremental validity can be determined by investigating the relationship between a construct and different criteria when theoretically associated constructs have been controlled for (Petrides & Furnham, 2001).

Various researchers have found that trait EI has a consistent pattern of correlation with established personality taxonomies and other theoretically associated constructs, such as alexithymia (Austin et al., 2005; Davies, Stankov & Roberts, 1998; Newsome, Day & Catano, 2000; O'Connor & Little, 2003; Parker et al., 2001; Petrides & Furnham, 2001; Saklofske et al., 2003). Trait EI therefore demonstrates convergent validity with various established personality taxonomies and a clear affinity to the domain of personality. Trait EI's theoretical association with the personality domain has however raised questions regarding its distinctness in this domain (Davies et al., 1998) and consequently of the value of trait EI as an isolated construct.

Several factor-analytic studies have demonstrated discriminant validity of trait EI. Trait EI was located as a distinct EI factor in both three and five dimensional personality factor spaces (Petrides & Furnham, 2001) and more specifically in the alexithymia factor space (Saklofske et al., 2003). Therefore, although trait EI seems to be highly related to personality and specifically the alexithymia constructs, these findings suggest that trait EI exists as 'a distinguishable, lower-order, composite personality construct' (Petrides & Furnham, 2001, p.442).

Affirmation of discriminant validity warrants investigation of the incremental validity of trait EI. Various researchers report that trait EI demonstrates explanatory power for a diverse number of criteria (e.g., happiness, life satisfaction, academic and social success, affect, social support, social network size) particularly after controlling for theoretically associated constructs (e.g., personality, self-esteem, trait anxiety; Ciarrochi, Chan & Bajgar, 2001; Petrides & Furnham, 2003; Saklofske et al., 2003; Van der Zee, Thijs & Schakel, 2002).

Measures of trait emotional intelligence

As already noted, measures of trait EI assess typical performance, such as behavioural tendencies and self-perceived abilities, (Petrides & Furnham, 2001)) which leads to the



operationalisation of trait EI as a personality trait. Various of these measures have however not been developed within a coherent EI theoretical framework and, consequently, they either purport to measure ability but utilize a measurement approach that leads to a trait operationalisation of EI or they neglect to assess various salient facets of trait EI (Petrides, Furnham & Frederickson, 2004).

The Emotional Intelligence Scale (EIS) is an example of a scale that purports to measure ability EI but assesses typical performance (Schutte et al., 1998). The EIS is based on the original three dimensional (i.e., appraisal and expression, regulation and utilization of emotion in problem solving and other cognitive activities) model of Salovey and Mayer (as cited in Schutte et al., 1998).

The Emotional Quotient Inventory (EQ-i) is an example of a scale that neglects to assess various salient facets of trait EI, including emotion expression, emotion regulation and self-motivation (Petrides & Furnham, 2001), suggesting incomplete coverage of the sampling domain of trait EI. Bar-On (2000) developed the EQ-i based on his model of EI to measure what he refers to as 'emotional and social intelligence' (p.363). The inventory is a typical performance measure and assesses non-cognitive capabilities, competencies, and skills. Petrides and Furnham (2001) developed the Trait Emotional Intelligence Questionnaire (TEIQue) with the intention to overcome these limitations.

Trait Emotional Intelligence Questionnaire

The TEIQue was developed within the theoretical framework of the 15-facet trait EI model which conceptualises EI as a construct in the personality domain (Petrides & Furnham, 2000, 2001). It is a typical performance measure (i.e., self-report) that assesses behavioural tendencies and self-perceived abilities relating to emotion (Petrides & Furnham, 2001). Although the TEIQue has been designed to cover the sampling domain of trait EI comprehensively (Pérez, Petrides & Furnham, 2005), empirical research is still necessary to support this. The psychometric properties of the scale will be given in Chapter 3.



Research on trait emotional intelligence and health-related behaviours

Research on the association between EI and health-related behaviours is limited. Trinidad and Johnson (2002; 2004) and Austin et al. (2005) investigated the association between EI and health-related behaviours focusing exclusively on health-threatening behaviours. In the first study by Trinidad and Johnson (2002), they found that low EI was associated with a higher prevalence in tobacco and alcohol use in adolescents. Similar correlations have been found between alexithymia and maladaptive nutritional habits, a sedentary lifestyle and substance abuse (Helmers & Mente, 1999). In a second study by Trinidad et al. (2004), they found that high EI functions as a protective factor for smoking in adolescents. (Austin et al., 2005) (2005) found a negative relationship between EI and alcohol consumption in adults.

Although these studies only investigated certain aspects of health-related behaviour, they give an indication of what can be expected when a broader set of health-related behaviours is investigated.

Although the Trinidad and Johnson studies have utilized ability EI rather than trait EI in relation to health-related behaviour, the results are still of value since the distinction between the two models is based on the operationalisation of the construct and not the theoretical content of the models. This warrants further investigation of trait EI in relation to health-related behaviours which can be compared with these earlier studies.

2.4 Conclusion

Research into the predictors of health-related behaviours, particularly those relating to chronic diseases, has identified various factors that can be associated with these behaviours. Very little research has however been done on SOC and trait EI. These constructs were discussed as well as the various measures used to operationalise these constructs. Both these constructs fit within a salutogenic perspective, therefore, the conceptualisation of chronic health and disease processes has been situated within this theoretical framework.



Chapter 3

Method

One major part of the purpose of a dissertation is to evaluate the process, not just to find an 'answer'.

(Black, 1999, p.29)

All scientific research subscribes to a particular belief about the nature of reality which in return impacts on the epistemology as well as the particular ways of knowing (i.e., methodology) appropriate for the study. The purpose of this chapter is to clarify these principles as well as to describe the various phases in the research process as it relates to the study. Issues of reliability and validity will be discussed where appropriate.

3.1 Research design

The research design comprises the planning phase of the study. Decisions have to be made regarding the research question, the hypotheses, the operationalisation of constructs, the sampling method, and the appropriate statistical tests (Black, 1999). The research design serves especially two purposes. First, it promotes well-planned research and second, it enables replicability of the research. In order to be able to formulate a research question and hypotheses it is necessary to first conceptualise the study.

3.1.1 Conceptualisation of this study

For the purpose of this study health-related behaviours were conceptualised with regard to their impact (i.e., positive or negative) on health. Positive health-related behaviours include

eating a healthy diet, regularly engaging in physical exercise, having regular screenings and checkups, not smoking, moderate alcohol use, getting vaccinations, and seat belt use. Negative health-related behaviours include eating an unhealthy diet, leading a sedentary life style, not having regular screenings and checkups, smoking, excessive alcohol use, and irresponsible driving.

Various models of health-related behaviour use social cognitive factors (e.g., self-efficacy, health locus of control and perceived health risk) as proximal determinants of health-related behaviours. A social cognitive factor that has received little attention in relation to health-related behaviour, that is sense of coherence (SOC), was used in this study. Although personality factors tend to be only distally associated with health-related behaviour, they do however seem to contribute to a better understanding of these behaviours. Trait emotional intelligence (EI) as a lower order personality trait was used in this study. The key variables for this study therefore comprised of health-related behaviour, SOC, and trait EI. Since neither SOC nor trait EI is manipulable a correlational approach was appropriate to investigate their relationship to health-related behaviours.

3.1.2 Design structure

Correlational research involves pre-experimental investigations into the nature of relationships between naturally occurring variables (Black, 1999; Cohen & Manion, 1994; Goodwin, 2002). It facilitates concurrent investigation of several variables in relative realistic settings (Cohen & Manion, 1994). Correlational research is often cross-sectional since variables are only measured once and the sample consists of only a single group (Black, 1999; French, Yardley & Sutton, 2005; Goodwin, 2002).

As a result of the single group design as well as the lack of control over variables no causal relationships between the variables can be established (Black, 1999; Cohen & Manion, 1994). Alternative explanations from confounding variables may therefore impact on the internal validity of a study (Black, 1999). Although no causal relationships can be established, sufficiently high correlations between variables may pave the way for regression analysis to determine a specific outcome by means of a set of predictor variables (Field, 2000; Goodwin, 2002). Regression analysis further enhances the description of the



relationship between variables.

3.1.3 Research question

Is there an association among adults' health-related behaviour, SOC and trait EI?

3.1.4 Hypotheses

The general research hypothesis states that a positive correlation among SOC, trait EI, and adults' health-related behaviours exists. Subsequent specific hypotheses are:

Hypothesis one

Adults with a strong SOC will display more positive health-related behaviours than adults with a weaker SOC.

Hypothesis two

Adults with higher trait EI will display more positive health-related behaviours than adults with lower trait EI.

Hypothesis three

Adults with a strong SOC will display more positive health-related behaviours than adults with a weaker SOC, when trait EI is controlled for.

Hypothesis four

Adults with higher trait EI will display more positive health-related behaviours than adults with lower trait EI, when SOC is controlled for.

Hypothesis five

SOC and trait EI will have predictive power over health-related behaviours.



3.1.5 Operationalisation of constructs

Participants rendered information regarding their age, gender, race, marital status, and highest qualification. Health behaviours, SOC, and trait EI were operationalised through self-report measures (see Appendix B).

Health Behaviour Survey

The Health Behaviour Survey (HBS) assesses selected aspects of people's health-related behaviour namely diet, sleep and preventive behaviours, alcohol use, exercise, and smoking. The survey was constructed by the researcher based on the literature on health-related behaviour and from the Lifestyle Questionnaire (Flora Institute, n.d.-b) and the International Physical Activity Questionnaire (Craig et al., 2003). The health-related behaviours that was selected for the HBS have particular significance in the development or active management of chronic diseases. An independent biokineticist evaluated the content of the survey. The questionnaire was constructed and utilised in English.

The survey consists of 26 items and primarily uses a 7-point Likert-type scale with anchors *never* (1) and *always* (7). Although the questions on exercise and smoking also use a 7-point scale, a more detailed description is given under each option. Four items are reversed scored. Possible scores range from 26 to 182 where a high score indicates more healthy behaviour.

Reliability of the HBS has not been established previously. The Cronbach alpha for the HBS in this study was .71.

Orientation to Life Questionnaire

The Orientation to Life Questionnaire (OLQ) assesses the extent to which an individual perceives life as comprehensible, manageable, and meaningful. The shorter 13-item version of the OLQ was used in this study to operationalise SOC (Antonovsky, 1987).

Five items are reversed scored to minimize bias. The items are rated on a 7-point semantic differential with relevant anchors at the extremes. Possible scores range from 13 to 91 where a high score indicates a stronger SOC. The English version of the OLQ was used in this study.



Antonovsky (1993) reported high levels of Cronbach's alpha (from .78 to .93), suggesting internal reliability. More recent studies matched this level of internal consistency (see Freire et al., 2001; Karlsson, Berglin & Larsson, 2000). In the current study the Cronbach alpha was .86.

Trait Emotional Intelligence Questionnaire

The Trait Emotional Intelligence Research Program gave permission to use the Trait Emotional Intelligence Questionnaire - Short Form (TEIQue-SF; Petrides & Furnham, n.d.) in this study (see Appendix D for letter of permission,). The TEIQue-SF consists of 30 items and is exclusively intended to measure global trait EI (Furnham & Petrides, 2003). The items are structured on a 7-point Likert-type scale (1 = *completely disagree* and 7 = *completely agree*). Possible scores range from 30 to 210 where a higher score indicates higher trait EI. The English version of the TEIQue-SF was used for this study.

Petrides and Furnham (2003) reported high levels of Cronbach's alpha (.86) on the TEIQue full-scale. In a subsequent study the internal consistency of the TEIQue was .76 (Petrides, Frederickson & Furnham, 2004). In the current study the Cronbach alpha was .90 for the TEIQue-SF.

3.1.6 Sample design and sampling

The particular sample design implemented in a research study impacts specifically on the extent to which the results of a study also holds true for other settings and circumstances, that is, the external validity of the study (Trochim, 2002). Sample designs that use probability sampling techniques will increase representativeness and subsequently also the external validity of the study (Black, 1999). Sample designs that use nonprobability sampling techniques cannot assure representativeness and will probably generate samples that are biased in some way (Goodwin, 2002).

A nonprobability sampling technique, namely convenience sampling, was used in this study. This technique primarily involves selection of cases or participants based on convenient and easy access (Aldridge & Levine, 2001; Black, 1999; Goodwin, 2002). Consequently, though participants may meet the general requirements of the study the

nonrandomness of the sampling technique limits the generalisability (i.e., external validity) of the results to the broader population.

In this study the primary interest was in the nature of the associations between variables and not cause-and-effect relationships. Furthermore, the variables investigated in this study were considered naturally occurring and for that reason not necessarily manipulable. Therefore, since this was a correlational study, a less rigorous sampling method was adequate.

The criteria for inclusion and exclusion comprised the following. Participants had to be:

- staff members of the University of Johannesburg (UJ) on the Auckland Park Kingsway (APK) campus;
- over the age of 22;
- computer literate.

Participants also had to have access to a personal computer that was connected to UJ's intranet since the questionnaire was hosted on an internal server. The sample will be described in chapter 4.

3.2 Data collection

UJ gave permission to collect the data from staff members on the APK campus (see Appendix C). The data were collected electronically by means of an online questionnaire hosted on a secure website. Participants were invited to complete the questionnaire by means of an invitation note (see Appendix A) stating the details of the website. Three hundred invitation notes were handed out. Ninety eight people (33%) completed the questionnaire.

Participants had to complete the electronic informed consent form before gaining access to the questionnaire. Participants were not asked to provide any identifying information. The questionnaire consisted of four subsections that were introduced with simple instructions regarding the completion of each section. After filling in all the questions participants submitted the data by clicking on the designated button ("Submit"). In the event that



questions were not filled in when participants tried to submit the data a reminder message appeared to inform them of these items.

The data collection took place during the month of September 2005 on the APK campus of UJ. Participants logged on to the website to complete the questionnaire in their own time without the presence of the researcher.

3.3 Data capturing and data editing

When participants submitted their responses the data were captured from the website into a password protected database. The data were captured in coded format minimising the possibility of capturing error as well as the need for data editing. Reversed scored items were inverted. An independent IT expert tested the programme for possible errors.

3.4 Data analysis

As the data collected were of a quantitative nature statistical procedures were used to analyse the data. Statistical computations were performed using SPSS for Windows version 12 (SPSS Inc., 2003). To ensure that the data analysis is statistically valid and that appropriate and valid conclusions are drawn from the analysis it is necessary to ensure that the underlying assumptions of the statistics used are adequately met (Black, 1999; Goodwin, 2002; Neuman, 2000).

3.4.1 Preliminary descriptive analysis

Descriptive statistics primarily serve two purposes, first, to describe the sample and summarise the data and second, to evaluate the quality of the data and establish the distributional nature of the data (Goodwin, 2002; Hardy, 2004; Tabachnick & Fidell, 1996). The sample was described in terms of age, gender, racial group, marital status, highest qualification, and possible chronic diseases by means of frequency tables. The data were summarised by means of measures of central tendency and variability.

In order to ensure that the right statistics are employed it is necessary to ensure that the

distribution of the data fits the assumptions of the particular multivariate analysis performed (Pallant, 2001; Tabachnick & Fidell, 1996). Parametric tests are embedded in the following assumptions:

- interval or ratio level of measurement;
- independence of observations;
- normally distributed data;
- homogeneity of variance.

The variables of all three measures used in this study are rated on the interval level of measurement. Accordingly, equal intervals are assumed but without absolute zeros (Black, 1999). Independence is assumed for all three measure as participants completed the questionnaire individually. The distributional properties of the data were evaluated by means of the Kolmogorov-Smirnov statistic, skewness and kurtosis. Normality will be reported on for each measure respectively together with summary statistics. Homogeneity of variance will be reported where applicable.

The Kolmogorov-Smirnov test determines how well the distribution of sample data fits a theoretically specified distribution (Black, 1999; Siegel & Castellen, 1988). In SPSS the Kolmogorov-Smirnov test determines how well the distribution of sample data fits a normal distribution with the same mean and standard deviation as the sample data. A nonsignificant result indicates that the distribution of the sample does not differ significantly from a normal distribution (Field, 2000). Skewness is a measure of symmetry in a distribution, that is, the extent to which the data is balanced around the mean (Hardy, 2004; Tabachnick & Fidell, 1996). Kurtosis is a measure of the peakedness of a distribution. A mesokurtic distribution resembles a normal distribution. A leptokurtic distribution is characterised by a heavy concentration around the mean. A platykurtic distribution is characterised by more widely dispersed scores (Hardy, 2004).

3.4.2 Item Analysis

The internal consistency of the measures of health-related behaviour, SOC, and trait EI was evaluated by means of Cronbach's alpha coefficient. Cronbach's alpha (see equation 3.1)



gives an indication of the extent to which the items of a measure are coherent (Neuman, 2000; Pallant, 2001) and is calculated as follows:

$$\alpha = \frac{k}{k-1} \left(1 - \frac{1}{\sigma_x^2 \sum \sigma_i^2} \right), \quad (3.1)$$

where k is the number of items, $\sum \sigma_i^2$ is the sum of the total variances of the items, and σ_x^2 is the variance of the total score (Bryman & Cramer, 2004). Acceptable values for Cronbach alpha are above .7 (Pallant, 2001).

Additionally, item statistics of the measures were inspected. The item mean, standard deviation and item-total correlation were inspected. The item mean gives an indication of the general tendency in participants' responses to each item with respect to the item mean of the measure. The item standard deviations give an indication of the average variation of each item from the item mean. Items with a large standard deviation indicate that the item sampled a wide range of the behaviour it purported to measure. The item-total correlation statistics reflect the correlation between each individual item and the total score. This gives an indication of the extent to which the individual items measure the same thing as the scale as a whole (Black, 1999; Pallant, 2001).

3.4.3 Bivariate correlational analyses

Bivariate correlations were used to investigate the correlations between pairs of variables (i.e., SOC & health-related behaviours; trait EI & health-related behaviours; SOC & trait EI). These relationships were first inspected by means of scatterplots to determine the nature of the relationships, if any, and to identify outliers in the data. (Field, 2000)

Subsequently, the Pearson's product-moment correlation coefficient (r) was used to investigate these correlations. Pearson's r (see equation 3.2) is the quotient of the covariance between two variables (cov_{xy}) and the product of the standard deviations of these two variables ($s_x s_y$; Black, 1999; Field, 2000).

$$r_{xy} = \frac{\text{COV}_{xy}}{s_x s_y} \quad (3.2)$$

Pearson's product-moment correlation coefficient is calculated subject to the following



assumptions:

- cases are independent (Black, 1999);
- the relationship between the variables is linear (Black, 1999);
- data are measured at the interval or ratio level (Black, 1999; Field, 2000);
- data are bivariate normally distributed (Hardy, 2004).

Values of r range from +1.00 to -1.00 where values closer to ± 1 indicate a stronger relationship between variables and values closer to zero indicate weaker or not any relationship between variables. A positive coefficient indicates a positive correlation, that is, as scores on one variable increase, scores on the other variable also increase. A negative coefficient indicates a negative correlation, that is, as scores on one variable increase, scores on the other variable decrease proportionally (Field, 2000; Goodwin, 2002). Coefficients of determination (r^2) were calculated to assess the amount of shared variability (Black, 1999).

3.4.4 Partial correlational analyses

Partial correlations were performed to investigate the correlation between two variables while the third variable was controlled for. The purpose of this procedure was to determine the unique amount of variability between SOC and health-related behaviours and between trait EI and health-related behaviours when trait EI and SOC were held constant respectively. Similarly to bivariate correlations values of r range from +1.00 to -1.00.

3.4.5 Regression analyses

Correlations between SOC and health-related behaviours and trait EI and health-related behaviours warranted regression analyses. Regression analyses were performed to investigate the predictive power of SOC and trait EI over health-related behaviours by fitting a best-fit line to the data (Black, 1999). The predictive model that was generated by the analysis is evaluated in two parts.



First, the model as a whole is evaluated in terms of its ability to predict the criterion and the amount of variance it explains in the criterion. The F -ratio from the analysis of variance gives an indication of the proportion of improvement in prediction due to the fitted model. The R -value is the multiple correlation coefficient and represents the correlation between the predictors and the criterion. The R^2 -value and adjusted R^2 -value reflect the amount of variability in the criterion explained by the predictors. Adjusted R^2 reflects a more accurate estimation of the parameter (R) for smaller samples.

Second, the individual predictors of the model are evaluated in terms of their unique contribution to the model. The β -coefficient reflects the unique contribution of a predictor when other predictors in the model are held constant. A predictor makes a significant contribution to the model if the t -statistic is significant. The standardised β -coefficients represent the number of standard deviations by which the criterion will increase or decrease when the predictor changes by one standard deviation.

Three correlation statistics are usually reported together with the β -coefficients. The zero-order correlation coefficient is the bivariate correlations between the predictor and the criterion. The partial correlation coefficient is the correlation between the predictor and the criterion while the effects of the other predictors are held constant. The part correlation coefficient is the unique correlation between the predictor and the criterion, that is, 'the relationship between [the] predictor and the part of the outcome that is not explained by the other predictors in the model' (Field, 2000, p. 137).

A basic regression model was first generated to establish how much variance in health-related behaviour the predictors are able to explain. All the predictors were entered into the model simultaneously. Subsequently a more parsimonious regression model was generated by means of stepwise regression. Predictors are entered one at a time based on statistical criteria. Predictors that no longer meet the statistical criteria at any subsequent step are removed (Tabachnick & Fidell, 1996).



3.5 Comments on the shortcomings and sources of error in the data

Although the Cronbach alpha coefficients for all the measures suggest good reliability, potential sources of invalidity and confounding may have impacted on quality of the data.

First, external validity may have been violated since the data may be sample and context specific particularly because convenient sampling was used. However, the data may still give insight into the health-related behavioural patterns of the personnel of the APK campus of UJ.

Second, a high nonresponse rate may have impacted on the composition of the sample. The invitation that was handed to participants served as a reminder to complete the questionnaire. The questionnaire consisted of nonintrusive measures and participation was anonymous. Participants were also given sufficient time to complete the questionnaire. The high nonresponse rate may therefore be due to failure to submit the data and the length of the questionnaire.

Third, nonresponse bias may have impacted on the representativeness of the data. Participants may differ significantly from nonparticipants.

Fourth, social desirability bias may have impacted on the reliability and validity of the data. Participants may have been dishonest by responding socially desirable.

The methodological matters of the study have been considered. The results will be reported in Chapter four.

Chapter 4

Results

Simply put, descriptive statistics summarize the data collected from the sample of participants participating in your study, and inferential statistics allow you to draw conclusions about your data that can be applied to the broader population.

(Goodwin, 2002, p.127)

4.1 Preliminary descriptive analysis

4.1.1 Descriptives statistics of the sample

The sample consisted of 98 adults between the ages of 22 and 68. The mean age of the participants was 39.07 years ($SD = 11.537$). The mean age for men was 37.42 ($SD = 12.721$) and for women was 39.91 ($SD = 10.605$). Table 4.1 presents the frequencies for the different age categories overall as well as across gender. The 40's group presented the highest overall frequency as well as the highest frequency for women. The 20's group presented the largest age group for men.

Table 4.1: *Frequencies for the different age groups*

Age group	Overall	Male	Female
20's	24	11	13
30's	28	9	19
40's	30	7	23
50's	12	4	8
60's	4	2	2



The majority of the participants identified themselves as White ($n = 88$), six as Black, three as Indian, and one as Asian. Fifty three participants were married, 35 have never been married, nine were divorced, and one separated. A master's degree was the qualification level with the highest frequency. Table 4.2 presents the frequencies of the qualification levels for the sample.

Table 4.2: *Frequencies for qualification levels*

Qualification	Frequency
Matric or equivalent	12
Certificate	8
Diploma	9
B.Tech	1
Undergraduate degree	12
Honours degree	14
Master's degree	26
Doctoral degree	16



With regards to the item on chronic diseases, 33 participants identified themselves as having some chronic condition. Table 4.3 presents the different conditions.

Table 4.3: *Frequencies of Chronic conditions*

Chronic condition	
Asthma	7
Diabetes	3
Cancer	2
Cardiovascular disease	1
Osteoporosis	1
Arthritis	2
CFS	1
High blood pressure	3
Hypothyroidism/Thyroid	2
Sinusitis	2
Allergies	2
Hay fever	1
Chronic anaemia	1
Gastro-oesophageal reflux	1
Glaucoma	1
Migraine	1
Psoriasis	1
Irritable Bowl Syndrome	1

4.1.2 Descriptives statistics of the measuring instruments

Health-related Behaviour Survey

The mean for the total score of the HBS was 114.61 with a standard deviation of 16.850. The scores ranged from 76 to 146. The mean score for the men was 113.52 with a standard deviation of 15.99 and the mean score for the women was 115.36 with a standard deviation of 17.64.

The Kolmogorov-Smirnov statistic confirms that the distribution, although slightly negatively skewed and flat, is normal. The statistics are presented in Table 4.4.

Table 4.4: *Kolmogorov-Smirnov statistic, skewness and kurtosis for the HBS*

Statistic	p	Skewness	Kurtosis
.069	.200	-.188	-.586

The HBS addressed various aspects of health-related behaviour, namely healthy habits, balanced diet, healthy foods, exercise and smoking. Frequency tables of these aspects are presented in Appendix E.

Healthy habits

Eight items addressed aspects relating to health-related habits, including eating breakfast and taking supplements, sleeping patterns, self-examinations or medical check ups and cooking methods.

- Although seven participants indicated that they never have breakfast, almost half (47.9%) of the participants indicated that they have breakfast every morning.
- Only one participant indicated that she never gets 7 to 8 hours sleep per night. Twenty nine (31%) participants indicated that they almost always get 7 to 8 hours sleep per night.
- More participants than not indicated that they take vitamin supplements. Twenty five per cent indicated that they take vitamin supplements daily and 48% indicated that they take vitamin supplements, though not daily. Only 28% indicated that they do not take vitamin supplements.
- Ten participants indicated that they regularly conduct self-examinations. Twenty nine participants indicated that they never conduct self-examinations.
- Participants indicated that they more frequently use boiling, broiling, baking, poaching, steaming, sautéing, stir-frying and / or microwaving cooking methods (78%) than deep or shallow frying cooking methods (13%).



- Seven participants indicated that they never add salt while cooking or at the table. Twenty three participants indicated that they always add salt.
- Twelve per cent of the participants indicated that they regularly go for medical checkups. Eleven per cent indicated that they never go for medical checkups.

Balanced diet

Nine items addressed aspects of health-related behaviour that relates to a balanced diet. A balanced diet contains a variety of foods, including starchy foods, fruits and vegetables, pulses and legumes, proteins and dairy. Fats and salt should be used sparingly and sugars should be used in moderation (Flora Institute, n.d.-a; Steenkamp & Delpont, 2004).

Overall, the results suggest that:

- starchy foods make up the basis of most meals;
- not enough fruit and / or vegetables are eaten, only 15% indicated that they eat at least three to five portions daily;
- dairy products are eaten daily;
- too much red meat is eaten weekly;
- not enough oily fish is eaten, 27% indicated that they never eat oily fish;
- pulses are eaten regularly;
- processed foods are rarely eaten daily.

Healthy foods

Four items addressed aspects of health-related behaviour that relates to healthy foods. The majority of participants indicated that they choose healthy variants such as whole-wheat variety starchy foods, low fat or no fat margarine, mayonnaise and salad dressing, low-fat or skimmed dairy products and low-fat meat alternatives.



Exercise

Two kinds of physical activities are distinguished, namely moderate physical activity and vigorous physical activity. Moderate physical activities are activities which require moderate physical effort and result in somewhat heavier breathing than normal. Vigorous physical activities are activities which require great physical effort and result in sustained heavy breathing and perspiration (Craig et al., 2003). Four different levels of each kind of physical activity can be distinguished, namely inactive, moderately active, active and very active. Scores for physical activity are calculated with the following formulas, and interpreted according to the cutpoints presented in Table 4.5:

$$\text{Vigorous physical activity: } \frac{\text{Day*Time}}{10} * 4$$

$$\text{Moderate physical activity: } \frac{\text{Day*Time}}{10} * 2$$

Table 4.5: *Cutpoints for physical activity levels*

Score	Physical activity level
29.5 or less	Inactive
30 – 41.5	Moderately active
42 – 59.5	Active
60 or more	Very active

Source: (Flora Institute, n.d.-b)

The frequencies for each physical activity level for moderate physical activity are presented in Table 4.6. More than half of the participants are classified as inactive with regards to moderate physical activities.

Table 4.6: *Physical activity levels: Moderate physical activity*

Activity level	male	%	female	%	Total	%
Inactive	15	16.0	49	52.1	64	68.1
Moderately active	3	3.2	4	4.3	7	7.4
Active	5	5.3	5	5.3	10	10.6
Very active	10	10.6	3	3.2	13	13.8



The frequencies for each physical activity level for vigorous physical activity are presented in Table 4.7. Almost 55% of the participants are classified as inactive with regards to vigorous physical activities. A crosstabulation of the activity levels for the two kinds of physical activities are presented in Appendix E.

Table 4.7: *Physical activity levels: Vigorous physical activity*

Activity level	male	%	female	%	Total	%
Inactive	13	13.8	38	40.4	51	54.3
Moderately active	7	7.4	6	6.4	13	13.8
Active	3	3.2	10	10.6	13	13.8
Very active	10	10.6	7	7.4	17	18.1

The proportion of women that are inactive are significantly different from the proportion of men that are inactive for both vigorous and moderate physical activity (vigorous physical activity: $\chi^2 = 9.1$, $p = .028$; moderate physical activity: $\chi^2 = 14.96$, $p = .002$). Women tend to be more inactive than men. When the active categories (i.e., moderately active, active & very active) are considered the following trends become clear. Women tend to fall into the *active* category rather than the *moderately active* or *very active* categories for both vigorous and moderate physical activity. Men tend to fall into the *very active* category rather than the *moderately active* or *active* categories for both vigorous and moderate physical activity.

Smoking

Ten participants indicated that they smoke daily. Four of these participants do not plan to quit whereas the other six plan to quit smoking. Six participants classified themselves as occasional smokers with the intention to quit. Eight participants indicated that they used to smoke. Two of these participants quit less than 10 years ago while the other six quit more than 10 years ago. Seventy four (78.7%) participants indicated that they have never smoked. The frequencies of smoking across gender are presented in Table 4.8. The proportion of men that smoke does not differ significantly from the proportion of women that smoke ($\chi^2 = .188$, $p = .665$).

Table 4.8: *Prevalence of smoking across gender*

	Smoking	Not smoking	Total
Male	6	27	33
Female	9	52	61
Total	15	79	94

Orientation to Life Questionnaire

The mean for the total score of the OLQ was 61.79 with a standard deviation of 14.46. The mean score for the men was 64.64 with a standard deviation of 10.18 and the mean score for the women was 62.8 with a standard deviation of 13.197. The scores ranged from 16 to 89. Participants scored similar to samples in other studies where mean scores ranged between 55 ($SD = 0.7$) and 68.7 ($SD = 10$; Antonovsky, 1993).

The Kolmogorov-Smirnov statistic indicates that the distribution violates the assumption of normality. The distribution is slightly negatively skewed and peaked. The statistics are reported in Table 4.9

Trait Emotional Intelligence Questionnaire

The mean for the total score of the TEIQue was 155.96 with a standard deviation of 28.41. The mean score for the men was 161.52 with a standard deviation of 23.23 and the mean score for the women was 158.05 with a standard deviation of 23.87. The scores ranged from 51 to 207.

The Kolmogorov-Smirnov statistic indicates that the distribution violates the assumption of normality. The distribution is slightly negatively skewed and peaked. The statistics are reported in Table 4.9.

Four cases were multivariate outliers because of the low scores on both the OLQ and the TEIQue. These cases were deleted leaving 94 cases for analysis. Following deletion of the outlier values, the Kolmogorov-Smirnov statistics for both measures confirmed normality (see Table 4.9).



Table 4.9: *Kolmogorov-Smirnov statistics, skewness and kurtosis for the OLQ and the TEIQue*

	Statistic	p	Skewness	Kurtosis
Orientation to Life Questionnaire				
Before deletion	.097	.024	-.83	.76
After deletion	.071	.20		
Trait Emotional Intelligence Questionnaire				
Before deletion	.097	.023	-.89	1.33
After deletion	.091	.052		

4.2 Item analyses

4.2.1 Health Behaviour Survey

The means of the 26 items for the HBS ranged from 2.90 (item 11) to 6.20 (item 26) and the standard deviations ranged from 1.35 (item 14) to 2.61 (item 3). The range of the means indicates that most participants answered on the higher end of the scale with regards to health behaviour. The range of the standard deviations indicates variation across participants' responses with regards to health behaviour. The means and standard deviations of the items are presented in Appendix E.

Thirteen items showed item-total correlations of below .3. This suggests that these items do not measure the construct represented by the HBS very well (Black, 1999; Pallant, 2001). Three of these items also lowered the internal consistency of the scale, but not extensively. The item-total correlations are presented in Appendix E.

4.2.2 Orientation to Life Questionnaire

The means of the 13 items for the OLQ ranged from 4.09 (item 3) to 5.52 (item 4) and the standard deviations ranged from 1.24 (item 4) to 1.82 (item 9). The range of the means indicates that most participants answered on the higher end of the scale with regards to SOC. The range of the standard deviations indicates variation across participants' responses with regards to SOC. The means and standard deviations of the items are presented in



Appendix E.

Only one item (item 1) showed an item-total correlation below .3. However, this item did not significantly lower the internal consistency of the scale. The item-total correlations are presented in Appendix E.

4.2.3 Trait Emotional Intelligence Questionnaire (Short Form)

The means of the 30 items for the TEIQue-SF ranged from 3.89 (item 22) to 6.09 (items 9, 27) and the standard deviations ranged from 1.09 (item 27) to 2.01 (item 25). The range of the means indicates that most participants answered on the higher end of the scale with regards to trait EI. The range of the standard deviations indicates variation across participants' responses with regards to trait EI. The means and standard deviations of the items are presented in Appendix E.

Two items showed item-total correlations below .3. None of the items lowered the internal consistency of the scale significantly. The item-total correlations are presented in Appendix E.

4.3 Bivariate correlational analyses

Prior to performing the correlational analyses scatterplots were generated for each pair of variables. All three scatterplots suggest linearity and positive relationships between the variables. Figure 4.1 illustrates the relationship between health-related behaviour and SOC. The scatterplot suggests a positive linear relationship with a low level of precision (Neuman, 2000).

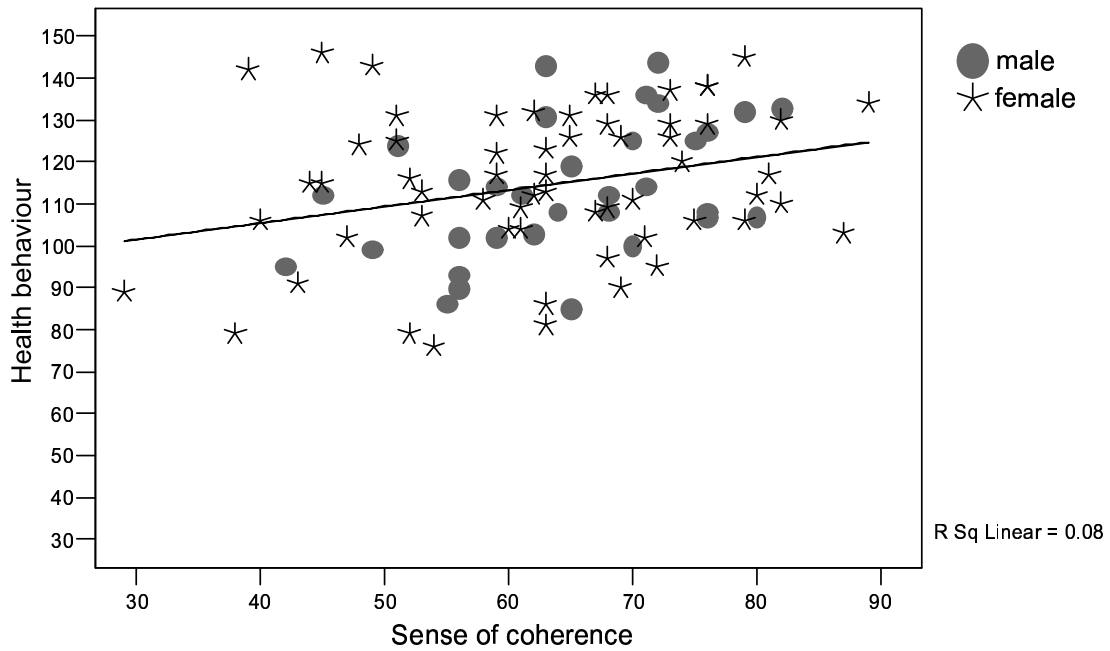


Figure 4.1: Scatterplot of health-related behaviour and SOC

Figure 4.2 illustrates the relationship between health-related behaviour and trait EI. The scatterplot suggests positive linear relationship with a low level of precision (Neuman, 2000).

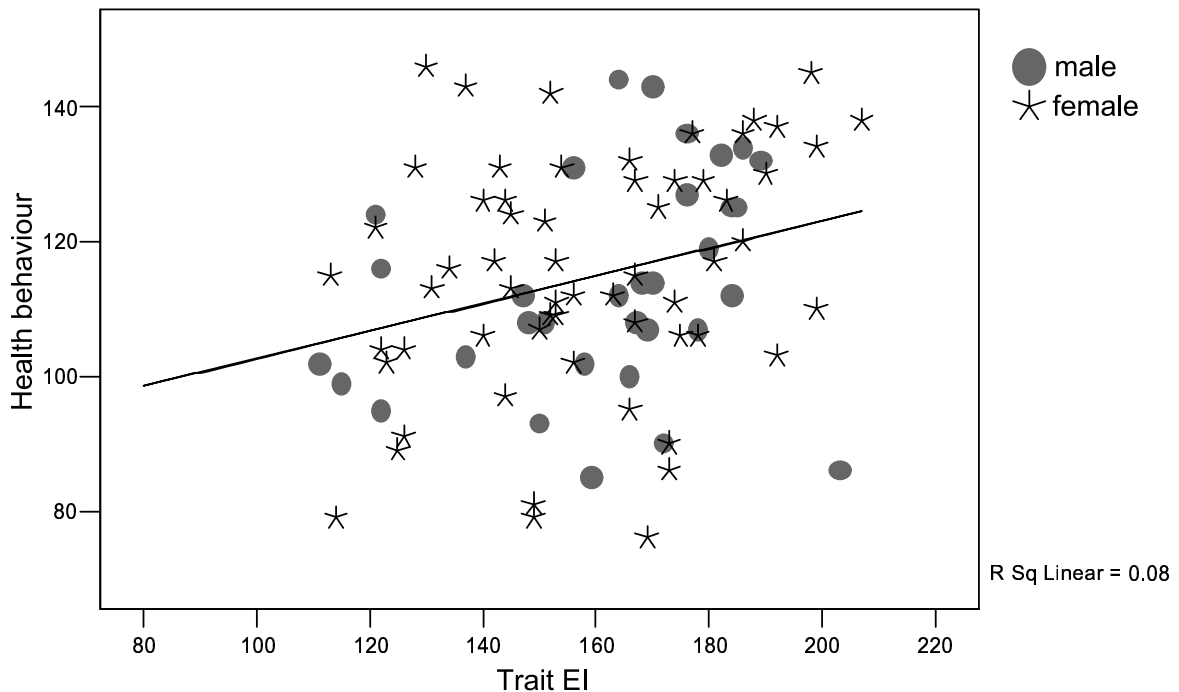


Figure 4.2: Scatterplot of health-related behaviour and trait EI

Figure 4.3 illustrates the relationship between SOC and trait EI. The scatterplot suggests positive linear relationship with a high level of precision (Neuman, 2000).

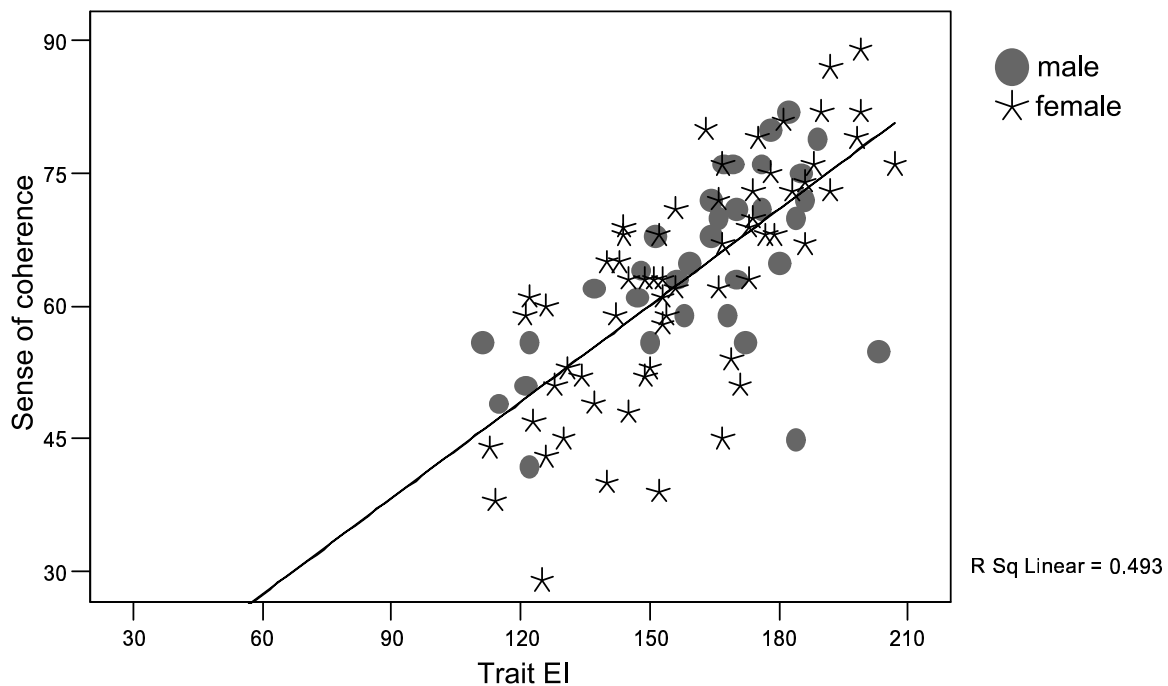


Figure 4.3: Scatterplot of SOC and trait EI

Subsequently, the relationships between the pairs of variables were investigated using Pearson product-moment correlation coefficients. There was a small, positive correlation between health-related behaviour and SOC ($r = .283$, $n = 94$, $p = .006$) with more healthy behaviour associated with a stronger SOC. Similarly, there was a small, positive relationship between health-related behaviour and trait EI ($r = .283$, $n = 94$, $p = .006$) with more healthy behaviour associated with higher EI. The coefficient of determination for both these pairs of variables is .08. SOC and trait EI therefore respectively explained 8% of the variance in participants' health-related behaviour.

Additionally, the bivariate correlations between SOC and trait EI and SOC and age were investigated. SOC and trait EI correlated significantly ($r = .702$, $n = 94$, $p < .001$) with a stronger SOC associated with higher EI. The coefficient of determination was .493 and SOC and trait EI therefore shared 49.3% of variance. SOC and age correlated significantly ($r = .249$, $p = .015$), with a stronger SOC associated with advanced age. The variables shared 6% variance with a coefficient of determination of .06.



4.4 Partial correlational analyses

Partial correlation was used to explore the relationship between pairs of variables while controlling for a third. First, partial correlation was used to explore the relationship between health-related behaviour and SOC while controlling for trait EI. There was a small, nonsignificant positive partial correlation between health-related behaviour and SOC ($r = .123, n = 91, p = .121$). Similarly a partial correlation was used to explore the relationship between health-related behaviour and trait EI while controlling for SOC. There was a small, nonsignificant positive partial correlation between health-related behaviour and trait EI ($r = .124, n = 91, p = .117$). In both cases 1.5% of the variance was explained by the different predictors.

4.5 Regression analyses

Multiple regression analyses were performed between health-related behaviour as the criterion and SOC and trait EI as the predictors. Standard multiple regression (i.e., all predictors entered at once) was used to generate a basic model (Tabachnick & Fidell, 1996). The model reached statistical significance ($F(2, 91) = 4.73, p = .011$) indicating that R was significantly different from zero ($R = .307$). Altogether, the predictors explained 9% (7% adjusted) of the variability in health-related behaviour. Table 4.10 presents a summary of the model.

Table 4.10: *Model summary*

R	R^2	Adjusted R^2	Std. error	F change	df_1	df_2	Sig. F change
.307	.094	.074	16.37	4.73	2	91	.011

Notes: a. Predictors: (Constant), Trait EI, SOC

None of the predictors made a significant contribution to the prediction of health-related behaviour. Table 4.11 presents the unstandardised coefficients, standardised coefficients, the t -values and the p -values.

Table 4.11: *Regression weights, t-tests and effect sizes in the prediction of health behaviour*

Model	Unstandardised coefficients		Standardised coefficients			Correlations		
	<i>b</i>	Std. error	β	<i>t</i>	<i>p</i>	Zero-order	Partial	Part
OLQ	.230	.195	.165	1.178	.242	.283	.123	.117
TEIQue	.121	.101	.168	1.197	.234	.283	.124	.119

Stepwise multiple regression (i.e., predictors are added one at a time) was used to generate a parsimonious model (Tabachnick & Fidell, 1996). The model reached statistical significance ($F(1, 92) = 8.034, p = .006$) indicating that R was significantly different from zero ($R = .283$). Altogether, the model explained 8% (7% adjusted) of the variability in health-related behaviour. Table 4.12 presents a summary of the model.

Table 4.12: *Model summary*

R	R^2	Adjusted R^2	Std. error	F change	df_1	df_2	Sig. F change
.283	.080	.070	16.40	8.03	1	92	.006

Notes: b. Predictors: (Constant), Trait emotional intelligence

Trait EI made a significant contribution to the prediction of health-related behaviour.

Scores on the HBS increase by .283 standard deviations as scores on the TEIQue increase by one standard deviation. This suggests an increase of 4.77 on the HBS when scores on the TEIQue increase by 28.41. Table 4.13 presents the unstandardised coefficients, standardised coefficients, the t -values and the p -values.

Table 4.13: *Regression weights, t-tests and effect sizes in the prediction of health behaviour*

Model	Unstandardised coefficients		Standardised coefficients			Correlations		
	<i>b</i>	Std. error	β	<i>t</i>	<i>p</i>	Zero-order	Partial	Part
TEIQue	.204	.072	.283	2.834	.006	.283	.283	.283



4.6 Main results

Health-related behaviour correlated significantly with both SOC and Trait EI. SOC and Trait EI were also significantly correlated. When controlling for a third variable neither SOC nor trait EI correlated significantly with health-related behaviour. Although none of the predictors made significant contributions to the prediction of health-related behaviour, the basic regression model reached statistical significance. Trait EI made a significant contribution to the prediction of health-related behaviour in a more parsimonious regression model which also reached statistical significance. The results will be discussed in Chapter five.



Chapter 5

Discussion, limitations, conclusion and recommendations

Discussion sections serve the important purpose of reflecting on an entire study, from reviewing the hypothesis and results to thinking about the “big picture”, the implications of the findings for existing and future scholarship.

(Dunn, 2004, p.98)

The aim of the study was to evaluate the association between health-related behaviours and SOC and trait EI. Overall, the results of this study supported the general hypothesis that a positive association exists among adults' health-related behaviours, SOC, and trait EI. The specific hypotheses will now be considered.

SOC is the extent to which an individual perceives life as comprehensible, manageable and meaningful (Antonovsky, 1987). Individuals with a stronger SOC are thought to be able to comprehend and manage stressors more effectively and consequently are more able to take better care of their health by engaging in better health-related behaviours. The hypothesis that adults with a strong SOC display more positive health-related behaviours was supported. Although this relationship was small, it is nonetheless statistically significant. This finding is consistent with previous research on the relationship between SOC and various health-related behaviours including physical exercise frequency (Hassmén et al., 2000), patterns of dental attendance (Freire et al., 2001), and oral health behaviours (Savolainen et al., 2005).

Trait EI is the extent to which an individual is able to deal with emotion-laden information



(Petrides, Furnham & Frederickson, 2004). Individuals with higher trait EI are thought to be able to perceive, process and apply emotion-laden information better and are considered psychologically more stable. Consequently, individuals with higher trait EI are expected to maintain positive health-related behaviours. The hypothesis that adults with higher trait EI display more positive health-related behaviours was supported. This suggests that people with higher trait EI possess a greater ability to cope with emotional and social pressures. Similar to SOC the relationship was small but still statistically significant. This finding is consistent with Trinidad and Johnson's (2002) and Austin et al.'s (2005) results on the relationship between EI and certain health-threatening behaviours (i.e., tobacco and alcohol use).

The hypothesis that adults with a strong SOC display more positive health-related behaviours when trait EI is controlled for was not supported. Similarly, the hypothesis that adults with higher trait EI display more positive health-related behaviours when SOC is controlled for was not supported. The strong correlation and the large amount of variance shared between SOC and trait EI is a possible explanation for the lack of support for both these hypotheses (Pallant, 2001; Tabachnick & Fidell, 1996).

The strong correlation between SOC and trait EI was unexpected. Venter (2003) only found a moderate correlation between SOC and emotional intelligence. This large amount of convergence may be ascribed to the theoretical relationship between the constructs. SOC may be a function of trait EI as trait EI contributes to efficient resolution of tension, particularly on an emotional level. The behavioural dispositions and self-perceptions of trait EI seem to correspond with the facets of SOC. Trait EI involves recognition, processing and utilization of emotion-laden information and SOC involves comprehension, management and meaning making of perceived stimuli. Processing corresponds with comprehension, utilization corresponds with management and recognition corresponds with meaning making.

The basic regression model indicated that SOC and trait EI have predictive power over health-related behaviours. The coefficient of determination was however small (9%) which suggests that other factors are also involved. The predictors did not make significant individual contributions in predicting health-related behaviour. In the more parsimonious model, only trait EI contributed significantly to regression. Individuals with higher TEIQue



score therefore seem to display more healthier behaviour. The model accounted for 8% of the variance in health-related behaviour.

The results of this study and interpretation of findings from this study should be considered within the context of the research design and methodology. First, the correlational design of the study prevents the investigation of causal relationships between variables due to the lack of control over variables (Black, 1999; Cohen & Manion, 1994). Consequently confounding variables may have affected the results and therefore impacted on the internal validity of the study. It is not possible to perform an experimental study due to various ethical implications, for example to expect people to follow an unhealthy diet.

Second, all the measures used in the study are self-report measures. Social desirability bias is therefore possibly a threat to the validity of these measures since it may impact on the accuracy of the measurement of the constructs. Third, the results of the study are not generalizable to the wider population of adults because of the nonprobability sampling method (i.e., convenience sampling). Fourth, although the HBS presented a satisfactory Cronbach's alpha, the items do not seem to 'hang' together. The HBS covered a wide variety of health-related behaviours namely diet, sleep and preventive behaviours, alcohol use, exercise, and smoking. These behaviours are not necessarily associated with the same factors. People that smoke may also partake in physical activities, or follow a healthy diet all because of different reasons.

5.1 Conclusion and recommendations for future research

The high correlation between SOC and trait EI warrants further investigation into the incremental validity of these constructs. Constructs that are theoretically associated should show convergence (i.e., correlate moderately with each other; Trochim, 2002), however, too high correlations call into question the distinctness of these constructs. The high correlation between SOC and trait EI in this study brings into question the distinctness of these constructs. This large amount of convergence between the two constructs impacts on the ability of these constructs to exert explanatory power over each other in a regression analysis. Although this study adds to the knowledge base on the relationship between SOC, trait EI, and health-related behaviours further validation of these findings is necessary.



One way would be to incorporate SOC and trait EI into existing health behaviour models. Future research on health-related behaviours should focus on selected health behaviours separately to ensure better consistency in the measurement.

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Appendix A

Invitation note

You are hereby invited to complete an online questionnaire:

Hiermee word u uitgenooi om 'n vraelys aanlyn te voltooi:

<http://eve.uj.ac.za/healthsurvey>

Should you require more information regarding the study, please contact me at:

Indien u meer inligting wil verkry rakende die studie, kontak my asseblief by:

083 722 6335

Anneli Hardy

ahar@rau.ac.za



Appendix B

Informed consent & Questionnaire



Pretoria 0002 Republic of South Africa Tel 012-420-4111

Fax 012-420-2404 <http://www.up.ac.za>

Faculty of Humanities / Fakulteit Geesteswetenskappe

Department of Psychology / Departement Sielkunde

Informed consent *Ingeligte toestemming*

Introduction/*Inleiding*

You are hereby invited to complete an online questionnaire. The purpose of this document is to inform you of the details of the study.

Hiermee word u uitgenooi om 'n vraelys aanlyn te voltooi (vraelys slegs in Engels beskikbaar). Die doel van hierdie dokument is om u in kennis te stel van die besonderhede van die studie.

Purpose of the study/*Doel van die studie*

The purpose of this study is to describe the association between adults' health behaviours, their general sense of comprehensibility, meaningfulness and manageability in life, as well as the way in which they perceive, process and apply emotional information. If at any time you have any questions about the study, please do not hesitate to contact the researcher or the supervisors.

Die doel van hierdie studie is om die assosiasie tussen die volgende faktore te beskryf: volwassenes se gesondheidsgedrag, hul algemene sin van die begrypbaarheid, betekenisvolheid en hanteerbaarheid van die lewe, asook die manier waarop volwassenes met emosionele inligting omgaan. Indien u enige vrae het rakende die studie, is u meer as welkom om die navorser of die studieleiers te kontak.

Confidentiality/*Vertroulikheid*



All information obtained during the study will be treated confidentially. The questionnaire will be completed via a secure webpage. Participation is voluntary and you can refuse/withdraw from participation at any time without stating a reason and without adverse consequences. If participation is withdrawn, the data collected from you will be destroyed. The data will be electronically safeguarded for a maximum period of five years, subject to your permission. The data will be used in the manner intended as stated in the purpose of the study and not for any other purposes. Data that may be reported in scientific journals will not include any information that identifies you as a participant.

Alle inligting wat gedurende die studie versamel is, word as vertroulik hanteer. Die vraelyste sal op 'n beveiligde webblad voltooi word. Deelname is vrywillig. U kan u deelname weier/onttrek ter enige tyd sonder om 'n rede te stel en sonder nadelige gevolge. Indien deelname onttrek word, sal die data wat versamel is, vernietig word. Die data wat versamel is sal, onderhewig aan u toestemming, elektronies in veilige bewaring gestoor word vir 'n maksimum periode van vyf jaar. Die data sal slegs gebruik word vir die doeleindes soos uiteengesit in die doel van die studie en vir geen ander doeleindes nie. Data wat in wetenskaplike joernale gepubliseer word, sal nie enige inligting insluit wat u as deelnemer kan identifiseer nie.

Informed consent/*Ingeligte toestemming*

I hereby confirm that I have read and understood this document provided by the researcher, Anneli Hardy, about the nature and procedures of the study. I am aware that the processed data of the study may be published. I am aware that I may, at any stage without prejudice, withdraw my consent and participation in the study. I now declare myself, of my own free will, prepared to participate in the study.

Ek bevestig hiermee dat ek hierdie dokument, wat deur die navorser, Anneli Hardy voorsien is, rakende die aard en prosedures, gelees en verstaan het. Ek is bewus daarvan dat die verwerkte data van die studie gepubliseer mag word. Ek is bewus daarvan dat ek ter enige tyd sonder vooroordeel, my toestemming en deelname aan die studie mag onttrek. Ek verklaar nou, vrywilliglik, dat ek bereidwillig is om aan die studie deel te neem.

I hereby give permission for the data to be electronically stored for a maximum period of five years.

Yes

Ek gee hiermee toestemming dat die data elektronies gestoor mag word vir 'n maksimum periode van vyf jaar.

Ja

I accept the above mentioned conditions/*Ek aanvaar die bogenoemde voorwaardes*



I decline to participate in the study/*Ek onttrek deelname aan die studie*

Contact details/*Kontak besonderhede*

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Health Behaviour Survey

Section 1. Demographic Information

Please complete the demographic information by typing in your age and selecting the appropriate option under gender, racial group, marital status and highest qualification. Under chronic diseases, please select all that are applicable.

Age: _____

- Gender:
- Male
 - Female

- Racial group:
- African
 - Asian
 - Coloured
 - Indian
 - White

I acknowledge the sensitivity of this question. This information will, however, only be used for research purposes.

- Marital status:
- Married
 - Single - Never married
 - Divorced
 - Separated
 - Widowed

- Highest qualification:
- Matric or equivalent
 - Certificate
 - Diploma
 - B. Tech
 - Undergraduate degree (e.g. BA, BCom)
 - Postgraduate diploma
 - Honours degree
 - Master's degree
 - Doctoral degree

- Chronic diseases, if any:
- Asthma
 - Diabetes
 - Cancer
 - Cardiovascular disease
 - Alzheimer's disease
 - Osteoporosis
 - Arthritis
 - Multiple sclerosis
 - Epilepsy
 - Other: (Please specify) _____
-



22. During the last 6 months, how many days per week did you do vigorous physical activities (that is, activities that result in sustained heavy breathing and perspiration)?

- 0 days
 1 day
 2 days
 3 days
 4 days
 5 days
 6 days

23. How much time did you spend on one day doing vigorous physical activities, during this period?

- none
 < 10min
 10-20 min
 20-30 min
 30-45 min
 45-60 min
 > 60min

24. During the last 6 months, how many days per week did you do moderate physical activities (this includes recreational activities such as gardening, walking, cycling, swimming)?

- 0 days
 1 day
 2 days
 3 days
 4 days
 5 days
 6 days

25. How much time did you spend on one day doing moderate physical activities, during this period?

- none
 < 10min
 10-20 min
 20-30 min
 30-45 min
 45-60 min
 > 60min

26. Please select the option that best describes you:

- Daily smoker - not planning to quit
 Daily smoker - planning to quit
 Occasional smoker - not planning to quit
 Occasional smoker - planning to quit
 Former smoker - quit < 10 years ago
 Former smoker - quit > 10 years ago,
 Never smoked



Section 3. Orientation to Life Questionnaire

Here is a series of questions relating to various aspects of our lives. Each question has seven possible answers. Please select the number which expresses your answer, with numbers 1 and 7 being the extreme answers. If the words under 1 are right for you, select 1; if the words under 7 are right for you, select 7. If you feel differently, select the number which best expresses your feelings.

27. Do you have the feeling that you don't really care about what goes on around you?
 very seldom or very often
 never 1 2 3 4 5 6 7

28. Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well?
 never always
 happened 1 2 3 4 5 6 7 happened

29. Has it happened that people whom you counted on disappointed you?
 never always
 happened 1 2 3 4 5 6 7 happened

30. Until now your life has had:
 no clear goals very clear goals
 or purpose at all 1 2 3 4 5 6 7 and purpose

31. Do you often have the feeling you're being treated unfairly?
 very often very seldom or
 1 2 3 4 5 6 7 never

32. Do you have the feeling that you are in an unfamiliar situation and don't know what to do?
 very often very seldom or
 1 2 3 4 5 6 7 never

33. Doing the things you do every day is:
 a source of a source of pain
 deep pleasure 1 2 3 4 5 6 7 and boredom
 and satisfaction

34. Do you have very mixed up feelings and ideas?
 very often very seldom or
 1 2 3 4 5 6 7 never

35. Does it happen that you have feelings inside that you would rather not feel?
 very often very seldom or
 1 2 3 4 5 6 7 never

36. Many people - even those with a strong character - sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?



never very often
 1 2 3 4 5 6 7

37. When something happened, have you generally found that:

you you saw things
 overestimated 1 2 3 4 5 6 7 in the right
 or
 underestimated its importance
 its importance

38. How often do you have the feeling that there's little meaning in the things you do in your daily life?

very often very seldom or
 1 2 3 4 5 6 7 never

39. How often do you have feelings that you're not sure you can keep under control?

very often very seldom or
 1 2 3 4 5 6 7 never

Source: Antonovsky, A. (1987). *Unraveling the mystery of health: How people manage stress and stay well*. San Francisco: Jossey-Bass.



Section 4. TEIQue-SF

Instructions: Please answer each statement below by selecting the number that best reflects your degree of agreement or disagreement with that statement. Do not think too long about the exact meaning of the statements. Work quickly and try to answer as accurately as possible. There are no right or wrong answers. There are seven possible responses to each statement ranging from 'Completely Disagree' (number 1) to 'Completely Agree' (number 7).

40. Expressing my emotions with words is not a problem for me.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

41. I often find it difficult to see things from another person's viewpoint.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

42. On the whole, I'm a highly motivated person.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

43. I usually find it difficult to regulate my emotions.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

44. I generally don't find life enjoyable.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

45. I can deal effectively with people.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

46. I tend to change my mind frequently.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

47. Many times, I can't figure out what emotion I'm feeling.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

48. I feel that I have a number of good qualities.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

49. I often find it difficult to stand up for my rights.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

50. I'm usually able to influence the way other people feel.



Completely Disagree 1 2 3 4 5 6 7 Completely Agree

51. On the whole, I have a gloomy perspective on most things.

Completely Disagree 1 2 3 4 5 6 7 Completely Agree

52. Those close to me often complain that I don't treat them right.

Completely Disagree 1 2 3 4 5 6 7 Completely Agree

53. I often find it difficult to adjust my life according to the circumstances.

Completely Disagree 1 2 3 4 5 6 7 Completely Agree

54. On the whole, I'm able to deal with stress.

Completely Disagree 1 2 3 4 5 6 7 Completely Agree

55. I often find it difficult to show my affection to those close to me.

Completely Disagree 1 2 3 4 5 6 7 Completely Agree

56. I'm normally able to "get into someone's shoes" and experience their emotions

Completely Disagree 1 2 3 4 5 6 7 Completely Agree

57. I normally find it difficult to keep myself motivated.

Completely Disagree 1 2 3 4 5 6 7 Completely Agree

58. I'm usually able to find ways to control my emotions when I want to.

Completely Disagree 1 2 3 4 5 6 7 Completely Agree

59. On the whole, I'm pleased with my life.

Completely Disagree 1 2 3 4 5 6 7 Completely Agree

60. I would describe myself as a good negotiator.

Completely Disagree 1 2 3 4 5 6 7 Completely Agree

61. I tend to get involved in things I later wish I could get out of.

Completely Disagree 1 2 3 4 5 6 7 Completely Agree

62. I often pause and think about my feelings.



Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

63. I believe I'm full of personal strengths.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

64. I tend to "back down" even if I know I'm right.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

65. I don't seem to have any power at all over other people's feelings.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

66. I generally believe that things will work out fine in my life.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

67. I find it difficult to bond well even with those close to me.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

68. Generally, I'm able to adapt to new environments.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

69. Others admire me for being relaxed.

Completely Completely
Disagree 1 2 3 4 5 6 7 Agree

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Submit



Appendix C

Permission form UJ



OFFICE OF THE DEPUTY VICE-CHANCELLOR (ACADEMIC ADMINISTRATION & RESEARCH) and REGISTRAR

Direct Line: 011-4893008/9
 Telefax: 011-4893057
 E-mail: dvdm@bestuur.rau.ac.za
 Web: <http://www.rau.ac.za>

Ref: DvdM/ig
 Date: 2005-08-29

Ms Adri Prinsloo
 Department of Psychology
 University of Pretoria
 PRETORIA
 0001

Dear Ms Prinsloo

APPROVAL TO Ms ANNELI HARDY TO OBTAIN RESEARCH SAMPLE AT THE UNIVERSITY OF JOHANNESBURG'S KINGSWAY CAMPUS

I refer to your letter of 24 August 2005 on the above matter.

Ms Hardy approached me earlier this year to discuss her project and to seek permission to carry out the proposed data collection on the Kingsway campus of the University of Johannesburg. The matter was discussed with Prof Anita Stuart, Head of the Department of Psychology at UJ, as well as with Prof Marie Muller, Dean of the Faculty of Education and a health scientist of repute. Both colleagues are happy with the proposed design for the data collection and foresee no ethical difficulties. Unfortunately, the newly merged UJ does not as yet have a University Ethics Committee, nor a University Wellness Committee, to which the research design could have been referred.

On the basis of the foregoing, permission is hereby granted for Ms Hardy to proceed with her data collection on the Kingsway campus of UJ.

Yours sincerely

PROF D VAN DER MERWE
 DEPUTY VICE-CHANCELLOR
 (ACADEMIC ADMINISTRATION & RESEARCH) and
 REGISTRAR
 2005-08-29
(PRINSLOO-2005-1)



Appendix D

Permission from Trait Emotional Intelligence Research Program

Gmail - TEIQue-SF

<http://mail.google.com/mail/?ik=f1a61d7127&view=pt&th=1060c...>

Anneli Hardy <annelihardy@gmail.com>

TEIQue-SF

4 messages

Anneli Hardy <annelihardy@gmail.com>

Tue, May 17, 2005 at 3:33 PM

Reply-To: Anneli Hardy <annelihardy@gmail.com>
To: K.petrides@ioe.ac.uk

Dr Petrides

I am planning a masters study to investigate the association between Aaron Antonovsky's construct sense of coherence and health behaviours, with trait emotional intelligence as a mediating factor. I would like to use the TEIQue-SF, but in electronic form. I would therefore like to ask permission to compile an electronic form. The questionnaire will be removed from the site after the data have been collected. Access will be controlled and limited to participants only.

Kind Regards
Anneli Hardy
University of Pretoria
South Africa

K. V. Petrides <k.petrides@ioe.ac.uk>

Wed, May 18, 2005 at 11:17 AM

To: Anneli Hardy <annelihardy@gmail.com>

Dear Anneli,

You are welcome to put the TEIQue on-line, provided that:

a) you include the following link and notice with it:

Copyright (c) 2002-2005
<<http://www.ioe.ac.uk/schools/phd/kpetrides/traitei.htm>> Trait Emotional
Intelligence Research Program. All rights reserved.

b) you send us the weblink.

c) the instrument and data are not used for any purpose other than research.

I hope this helps. Let me know if you need anything else.

Best wishes,
Dino

[Quoted text hidden]

Dr K. V. Petrides
Institute of Education
University of London
25 Woburn Square (room 313)
London WC1H 0AA
UK

Anneli Hardy <annelihardy@gmail.com>

Tue, Aug 30, 2005 at 2:10 PM

To: "K. V. Petrides" <k.petrides@ioe.ac.uk>

Dr. Petrides

Here is the link to my study's questionnaire. Please let me know if I need to make changes to the TEIQue.

<http://eve.rau.ac.za/healthsurvey>

Regards
Anneli

[Quoted text hidden]

K. V. Petrides <k.petrides@ioe.ac.uk>

Wed, Aug 31, 2005 at 12:17 PM

To: Anneli Hardy <annelihardy@gmail.com>



Gmail - TEIQue-SF

<http://mail.google.com/mail/?ik=f1a61d7127&view=pt&th=1060c...>

That's great. The survey looks very neat - good luck with it.

Best wishes,
Dino

At 13:10 30/08/2005, you wrote:

>Dr. Petrides

>

>Here is the link to my study's questionnaire. Please let me know if I need

>to make changes to the TEIQue.

>

><<http://eve.rau.ac.za/healthsurvey>><http://eve.rau.ac.za/healthsurvey>

>

>Regards

>Anneli

>

>On 5/18/05, K. V. Petrides

[Quoted text hidden]

[Quoted text hidden]



Appendix E

Item statistics

Table E.1: *Item statistics of the Health Behaviours Survey*

Mean	SD	Corrected item-total correlation	Cronbach's alpha if item deleted	Never	Always
Healthy Habits					
I eat breakfast every morning (HBS 1)					
5.15	2.24	.39	.69	7	45
I get 7 to 8 hours sleep per night (HBS 2)					
4.69	1.59	.15	.71	1	8
I take vitamin supplements daily(HBS 5)					
3.86	2.43	.34	.70	26	23
I regularly conduct breast self-examinations or testicular self-examinations (HBS 6)					
3.05	2.03	.39	.69	29	10
I boil, broil, bake, roast, poach, steam, sauté, stir-fry and / or microwave my food (HBS 14)					
5.39	1.35	.31	.70	1	22
I deep fry and / or shallow fry my food (HBS 15) ^a					
2.62	1.45	.52	.69	20	2
I usually add salt while cooking or at the table (HBS 16) ^a					
4.95	1.86	.09	.72	7	23
I regularly go for medical check ups even when I don't have a problem (HBS 21)					
3.87	1.83	.47	.69	10	11
Balanced diet					
I drink 3 or less units per alcohol daily (HBS 3)					
3.66	2.61	.05	.73	32	27
I limit my intake of coffee and tea to 3 cups or less a day (HBS 4)					
4.56	2.21	.16	.71	13	32
I eat starchy foods at every meal (HBS 7)					
4.46	1.78	-.21	.73	7	15
I eat at least 3 to 5 portions of fruit and / or vegetables daily (HBS 8)					
4.31	1.80	.49	.69	4	14
I eat dairy products daily (HBS 9)					



Mean	SD	Corrected item-total correlation	Cronbach's alpha if item deleted	Never	Always
5.51	1.56	.22	.71	6	35
I eat red meat 3 times or more a week (HBS 10) ^a					
4.15	2.03	.06	.72	8	19
I eat oily fish weekly (HBS 11)					
2.90	1.84	.26	.70	25	5
I eat pulses weekly (HBS 12)					
3.56	1.60	.30	.70	8	5
I eat processed foods daily (HBS 13) ^a					
3.54	1.68	.41	.69	4	7
Healthy foods					
I choose whole-wheat variety starchy foods (HBS 17)					
5.07	1.56	.33	.70	4	21
I use low fat or no fat margarine, mayonnaise and salad dressing (HBS 18)					
5.49	1.89	.38	.70	5	43
I choose low-fat or skimmed dairy products (HBS 19)					
4.90	2.24	.50	.69	13	33
I choose low-fat meat alternatives where possible (HBS 20)					
5.28	1.75	.55	.68	3	33
Exercise					
How many days per week did you do vigorous physical activities (HBS 22)					
3.29	1.58	.20	.71		
How much time did you spend on one day doing vigorous physical activities (HBS 23)					
4.05	1.92	.20	.71		
How many days per week did you do moderate physical activities (HBS 24)					
4.20	1.80	-.08	.73		
How much time did you spend on one day doing moderate physical activities (HBS 25)					
4.49	1.77	.13	.71		
Smoking					
Smoking categories (HBS 26)					
6.20	1.70	.10	.71	3	33

Notes: a. Reversed scored



Table E.2: *Cross-tabulation of vigorous physical activity: number of days per week * amount of time per day*

	0 days	1 day	2 days	3 days	4 days	5 days	6 days	Total
none	10	2	1	-	-	-	-	13
less than 10 min.	-	7	3	-	1	-	1	12
10 to 20 min.	1	2	3	2	1	1	-	10
20 to 30 min.	-	6	2	6	2	1	-	17
30 to 45 min.	-	2	1	10	2	-	-	15
45 to 60 min.	-	4	4	4	4	1	1	18
more than 60 min.	-	1	3	2	-	-	3	9
Total	11	24	17	24	10	3	5	94

Table E.3: *Cross-tabulation of moderate physical activity: number of days per week * amount of time per day*

	0 days	1 day	2 days	3 days	4 days	5 days	6 days	Total
none	4	-	-	-	-	-	-	4
less than 10 min.	-	4	1	1	-	-	2	8
10 to 20 min.	-	3	6	5	2	-	2	18
20 to 30 min.	-	5	2	5	3	4	2	21
30 to 45 min.	-	-	4	3	2	2	2	13
45 to 60 min.	-	2	4	-	3	1	1	11
more than 60 min.	-	-	3	4	3	2	7	19
Total	4	14	20	18	13	9	16	94



Table E.4: *Cross-tabulation of vigorous physical activity levels * moderate physical activity levels*

	Inactive	Moderately active	Active	Very active	Totals
Inactive	40	8	8	8	64
Moderately active	2	-	2	3	7
Active	2	3	2	3	10
Very active	7	2	1	3	13
Totals	51	13	13	17	94

Table E.5: *Smoking categories*

Category	Frequency
Daily smoker - not planning to quit	4
Daily smoker - planning to quit	6
Occasional smoker - not planning to quit	-
Occasional smoker - planning to quit	6
Former smoker - quit less than 10 years ago	2
Former smoker - quit more than 10 years ago	6
Never smoked	74

Table E.6: *Item statistics of the OLQ*

		Corrected	Cronbach's
Mean	SD	Item-Total	Alpha if
		Correlation	Item Deleted
Do you have the feeling that you don't really care about what goes on around you? (OLQ 1) ^a			
5.47	1.689	.262	.865
Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well? (OLQ 2) ^a			
4.34	1.395	.436	.853
Has it happened that people whom you counted on disappointed you ? (OLQ 3) ^a			
4.09	1.479	.581	.845
Until now life your life has had (1) no clear goals or purpose at all (7) very clear goals and purpose (OLQ 4)			
5.52	1.242	.333	.858
Do you often have the feeling you're being treated unfairly? (OLQ 5)			
4.66	1.583	.405	.855
Do you have the feeling that you are in an unfamiliar situation and don't know what to do? (OLQ 6)			
5.26	1.436	.583	.845
Doing the things you do every day is (1) a source of deep pleasure and satisfaction (7) a source of pain and boredom (OLQ 7) ^a			
5.14	1.365	.523	.848
Do you have very mixed up feelings and ideas? (OLQ 8)			
4.83	1.702	.662	.839
Does it happen that you have feelings inside that you would rather not feel? (OLQ 9)			
4.39	1.815	.659	.838



		Corrected	Cronbach's
Mean	SD	Item-Total	Alpha if
		Correlation	Item Deleted
Many people – even those with a strong character – sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past? (OLQ 10) ^a			
4.68	1.483	.546	.847
When something happened, you have generally found that (1) you overestimated or underestimated its importance (7) you saw things in the right proportion (OLQ 11)			
4.79	1.406	.463	.852
How often do you have the feeling that there's little meaning in the things you do in your daily life? (OLQ 12)			
5.05	1.622	.653	.839
How often do you have feelings that you're not sure you can keep under control? (OLQ 13)			
5.23	1.719	.653	.839

Notes: a. Reversed scored

Table E.8: *Item statistics of the TEIQue*

		Corrected	Cronbach's
Mean	SD	Item-Total	Alpha if
		Correlation	Item Deleted
Expressing my emotions with words is not a problem for me (TEIQue 1)			
5.09	1.800	.422	.901
I often find it difficult to see things from another person's viewpoint (TEIQue 2) ^a			
5.49	1.494	.394	.901
On the whole, I'm a highly motivated person (TEIQue 3)			
5.74	1.163	.501	.900
I usually find it difficult to regulate my emotions (TEIQue 4) ^a			
5.49	1.268	.511	.900
I generally don't find life enjoyable (TEIQue 5) ^a			
5.80	1.507	.432	.901
I can deal effectively with people (TEIQue 6)			
5.62	1.553	.607	.898
I tend to change my mind frequently (TEIQue 7) ^a			
5.03	1.656	.200	.905
Many times, I can't figure out what emotion I'm feeling (TEIQue 8) ^a			
5.46	1.758	.392	.902
I feel that I have a number of good qualities (TEIQue 9)			
6.09	1.170	.560	.899
I often find it difficult to stand up for my rights (TEIQue 10) ^a			
4.59	1.931	.440	.901
I'm usually able to influence the way other people feel (TEIQue 11)			
4.48	1.638	.346	.902
On the whole, I have a gloomy perspective on most things (TEIQue 12) ^a			
5.20	1.853	.318	.903
Those close to me often complain that I don't treat them right (TEIQue 13) ^a			



		Corrected	Cronbach's
Mean	SD	Item-Total	Alpha if
		Correlation	Item Deleted
6.02	1.182	.420	.901
I often find it difficult to adjust my life according to the circumstances (TEIQue 14) ^a			
5.56	1.349	.630	.898
On the whole, I'm able to deal with stress (TEIQue 15)			
5.34	1.418	.484	.900
I often find it difficult to show my affection to those close to me (TEIQue 16) ^a			
5.38	1.736	.562	.898
I'm normally able to "get into someone's shoes" and experience their emotions (TEIQue 17)			
5.21	1.537	.386	.902
I normally find it difficult to keep myself motivated (TEIQue 18) ^a			
5.35	1.740	.451	.900
I'm usually able to find ways to control my emotions when I want to (TEIQue 19)			
5.65	1.358	.571	.899
On the whole, I'm please with my life (TEIQue 20)			
5.76	1.198	.660	.898
I would describe myself as a good negotiator (TEIQue 21)			
5.12	1.436	.620	.898
I tend to get involved in things I later wish I could get out of (TEIQue 22) ^a			
3.89	1.662	.389	.902
I often pause and think about my feelings (TEIQue 23)			
4.74	1.633	.262	.904
I believe I'm full of personal strengths (TEIQue 24)			
5.81	1.139	.608	.899
I tend to "back down" even if I know I'm right (TEIQue 25) ^a			
4.31	2.006	.536	.899
I don't seem to have any power at all over other people's feelings (TEIQue 26) ^a			



		Corrected	Cronbach's
Mean	SD	Item-Total	Alpha if
		Correlation	Item Deleted
4.73	1.567	.442	.901
I generally believe that things will work out fine in my life (TEIQue 27)			
6.09	1.094	.542	.900
I find it difficult to bond well even with those close to me (TEIQue 28) ^a			
5.60	1.533	.619	.897
Generally, I'm able to adapt to new environments (TEIQue 29)			
5.76	1.357	.592	.898
Others admire me for being relaxed (TEIQue 30)			
4.88	1.690	.427	.901

Notes: a. Reversed scored



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