The presentation of self-concept and emotional profile in a cardiological population

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Summary

This research study examines the manner in which a cardiological sample presents in terms of their psychological make-up by making specific reference to the constructs self-concept and emotions. A literature overview of different aspects of self-concept, emotion and cardiology places the results and discussions of the study within a theoretical background. The study supplies descriptive information relating to the demographic profile of the sample, followed by a description of various aspects of self-concept and emotions, as well as a correlational exploration of the manner in which the sample group presents.

The sample consisted of 29 individuals, all who had been diagnosed with coronary heart disease (CHD) and been subjected to surgery as a result thereof. The participants completed a questionnaire, containing two measurement instruments, namely the Adolescent Self-Concept Scale (ASCS) and the Emotions Profile Index (EPI). The scores, obtained by the sample, were subjected to statistical analysis to provide a self-conceptual and emotional profile of the sample. The Spearman Rank-Order Correlation Coefficient was then used to indicate the extent to which the sample tended towards portraying themselves in a positive light, more than they might be experiencing. The study further refers to the views of the sample group, relating to these findings, as obtained from an information and discussion session held with them.

The study indicate a significant statistical trend amongst the sample group to portray themselves in a positive light in relation to emotions, even though they were not in reality experiencing such positive emotions. Although the same positive trend was indicated with self-concept, the study cannot conclusively indicate that this is not a realistic presentation of the sample group as a whole.

Key words: Self-concept, emotion, cardiology, psychological presentation, Adolescent Self-Concept Scale (ASCS), Emotions Profile Index (EPI), Coronary Heart Disease (CHD), risk factors, Spearman's Rank-Order Correlation Coefficient, Robert Plutchik, psychoevolutionary.

Opsomming

Hierdie studie ondersoek die wyse waarop 'n kardiologiese steekproef presenteer in terme van hul sielkundige voorstelling deur spesifieke verwysing na die konstrukte self-konsep en emosies. 'n Literatuuroorsig van verskillende aspekte van self-konsep, emosie en kardiologie plaas die resultate, en besprekings van die studie, binne 'n teoretiese agtergrond. Die studie verskaf beskrywende inligting wat verband hou met die demografiese profiel van die steekproef, gevolg deur 'n beskrywing van verskeie aspekte van self-konsep en emosies, sowel as 'n korrelatiewe eksplorasie van die wyse waarin die steekproef presenteer.

Die steekproef het bestaan uit 29 individue wat almal gediagnoseer was met koronêre vatsiekte en as gevolg hiervan onderworpe was aan chirurgie. Die deelnemers het 'n vraelys voltooi wat twee meetinstrumente bevat, naamlik die Adolescent Self-Concept Scale (ASCS) en die Emotions Profile Index (EPI). Die steekproef se tellings was onderworpe aan statistiese analise om 'n self-konsep en emosionele profiel van die steekproef daar te stel. Die Spearman Rank-Orde Korrelasie Koëffisient is gebruik om die mate waartoe die steekproef daartoe neig om hulself in 'n positiewe lig te presenteer, meer as wat hulle dalk ondervind, aan te dui. Die studie verwys verder na die siening van die steekproef oor die bevindinge, wat verkry is tydens 'n informasie- en besprekingsessie, wat deur hulle bygewoon is.

Die studie het 'n beduidende statistiese neiging by die steekproef aangedui om hulself in 'n positiewe lig uit te beeld in terme van emosies, ten spyte van die feit dat hulle dalk in realiteit nie sulke positiewe emosies ervaar nie. Alhoewel dieselfde positiewe neiging aangedui is met die self-konsep, kan die studie nie uitsluitlik aandui dat dit nie 'n realistiese aanduiding is van die steekproef as 'n geheel nie.

Sleutel terme: Self-konsep, emosie, kardiologie, sielkundige voorstelling, Adolescent Self-Concept Scale (ASCS), Emotions Profile Index (EPI), koronêre vatsiekte, risiko faktore, Spearman Rank-Orde Korrelasie Koëffisient, Robert Plutchik, psigo-evolusionêr.

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CHAPTER 1

GENERAL INTRODUCTION

1.1. INTRODUCTION

This introductory chapter will provide a brief overview of how the researcher became aware of this area of study, and will clarify the different elements that form the focus of this study. Chapter 1 will further state the research question, and indicate how this question can be addressed by proposing hypotheses. Finally, the chapter will conclude with a chapter overview of the study.

Please note that for the sake of simplicity examples used in this research study will mostly refer to the male gender. No offence is intended with this, and the examples can be used interchangeably with the female gender.

1.2. AWARENESS OF PROBLEM

The cardiological rehabilitation unit at 1 Military Hospital subscribes to a multidisciplinary approach to best meet the needs of the patients who are treated there. This context is different from what may be found in the private sector, as such a rehabilitation programme is very expensive. This expense is due to the number of medical professionals who are part of the team, as well as the time spent on the programme.

It is within this context that the researcher worked as a counselling psychology intern at the cardiological unit. The researcher participated in certain parts of the rehabilitation programme, so as to get to know the patients. The researcher attended aerobic exercise sessions on a regular basis (three mornings per week), which enabled him to observe the cardiological patients in social interaction with himself, as well as with other patients.

The researcher became aware of how the exercise group portrays a very positive image to the outside world. It was as if positive aspects of life were emphasised, and negative aspects were often ignored or shied away from. Did this mean that the group in fact learned to cope with all the negative psychological aspects associated with coronary surgery? Or did it mean that the group did in fact feel the negative emotions, but that this was not the appropriate context in which to express them?

In most areas of psychology, a psychologist can identify potential clients by the mere fact that they are sitting in front of him. They have identified a need in themselves, have approached a psychologist, which allows the psychologist to gain insight into their psychological make-up by asking probing questions, and so forth. Within the context of the cardiological unit it was not so easy, as the patients were interacting on a social level, and as such, were not as keen to approach the psychologist to discuss their problems.

In this manner, the researcher became aware of the following problem: How can he gain insight into the underlying psychological make-up of the individuals in the group? Firstly, to understand how they present themselves to the outside world, and secondly, to identify to what extent this presentation is a reflection of their actual psychological status.

1.3. PROBLEM ANALYSIS

Coronary heart disease (CHD) is the number one killer amongst South Africans, and costs South Africa in the region of R4 135 to R5 035 Billion during 1991 (Heart Foundation of South Africa, 2003). Even though this cost is immense, the cost to individuals suffering from CHD and their families is even greater. Various authors have commented on the impact of CHD in the lives of patients and their loved ones. According to Van Sittert (2001), the psychosocial implications of

CHD can have a disastrous influence on the patient, as the damage of coronary surgery is not limited purely to the physical body of the patient. The impact can be compared to a great loss, and a patient may undergo a similar process of mourning, as he would experience after losing a loved one. Other authors, like Artinian (1991), stress the way in which the patient's home environment, in terms of marital and family relationships, can be compromised. Mckhann & Borowicz (1997) commented on the prevalence of depression in patients following coronary surgery.

It is clear that the severe impact of CHD on individuals cannot be underestimated. It can be expected that individuals will find different ways in which to cope with the effects of CHD. The researcher was then faced with the challenge of finding a way in which to gain insight into the psychological experience of the patients. The researcher decided to make use of psychometric measurement instruments to get a picture of certain aspects of the patients' psychological make-up. Instruments utilising a bias component would also enable the researcher to get a measure of the extent to which the psychological presentation of the individuals in the group is consistent with their actual psychological make-up.

The researcher decided to make use of the psychological constructs of self-concept and emotion for this purpose, as basic aspects of psychological functioning. Both of these concepts are terms that lay-people use on a daily basis and have an intuitive understanding of (Byrne, 1996; Westen, 1996), and people can easily relate to them. According to Byrne (1996) the self-concept has been a central theme of discussion in the social sciences, and a valuable means of understanding human behaviour. Emotion is a primary means of communication that human beings use to convey messages, sometimes authentic, and sometimes fraudulent (Westen, 1996).

1.4. RESEARCH PROBLEM

The research problem is defined as follows:

Question 1:

- How does a cardiological population present in terms of the psychological constructs of self-concept and emotion?

Question 2:

- To what extent is this presentation a reflection of actual psychological make-up?

1.5. AIMS OF STUDY

1.5.1. General aims

The general aims of this study are to, firstly, describe the presented self-concept and emotional profile of a cardiological population as well as indicate to what extent this presentation is a reflection of their actual psychological make-up. Secondly, the study aims at disseminating the results back to the participants in the study to examine their understanding thereof.

1.5.2. Specific aims

The purpose of the study in specific terms is:

(a). To describe the population in terms of their self-concept and emotional profile in the following specific categories:

- The concept of self-concept will be described in terms of:

  - Physical self
  - Personal self
  - Family self
  - Social self
  - Value self
  - Self-criticism (Bias scale)

- The concept of emotions will be described in terms of:

  - Gregarious dimension
  - Trustful dimension
  - Dyscontrolled dimension
  - Timid dimension
  - Depressed dimension
  - Distrustful dimension
  - Control dimension
  - Aggressive dimension
  - Bias scale

This would give the researcher an indication as to what extent the sample group identifies with the different aspects of self-concept and emotion.

(b) To indicate to what extent this presentation is a reflection of the sample's actual psychological make-up, by correlating the scores obtained on the subscales with the Self-critique scale (in the case of the Self-Concept) and the Bias scale (in the case of emotions).

(c) To relate the thoughts and experiences of the sample group upon being presented with the findings of the study. The sample will be asked to indicate

whether or not they agree with the different aspects of the findings, and to comment on how they understand these results. This feedback will be based on a discussion session held with the participants after statistical analysis of the scores on the research study has been completed.

1.6. DEFINING THE CONCEPTS

1.6.1. Self-Concept

Carl Rogers (1960, p. 2) provided a comprehensive definition of the Self-Concept:

> [The self-concept is] the organised consistent conceptual Gestalt composed of perceptions of the characteristics of the I or Me and the perceptions of the relationships of the I or Me to others and to various aspects of life, together with the values attached to these perceptions. It is a Gestalt, which is available to awareness though not necessarily in awareness. It is a fluid and changing Gestalt, a process, but at any given moment it is a specific entity.

This definition contains the core elements of the Self-Concept as it is used in this research study. Carl Rogers, among other theorists, whose views will be discussed in detail in the next chapter, conceptualises the Self-Concept as having the following characteristics:

- The self-concept can never be seen in isolation from the external environment.
- The self-concept is based on the subjective meaning that an individual attaches to the environment.
- The self-concept is dynamic and ever changing.

- The self-concept is a composite of intertwined parts that can never be viewed as totally separate.

Chapter Two will focus on how these elements of Self-Concept have been conceptualised by a number of different theorists.

1.6.2. Emotion

Drew Westen (1996, p. 407) defines emotion as:

Emotion…is an evaluative response (a positive or negative feeling) that typically includes some combination of physiological arousal, subjective experience, and behavioural or emotional expression.

According to Robert Plutchik, emotion can be conceptualised using evolutionary principles. The Psychoevolutionary Theory of Emotion is based on the following fundamental postulates (Plutchik, 1980, p. 8-9):

- The concept of emotion is applicable to all evolutionary levels and applies to animals as well as to humans.
- Emotions have an evolutionary history and have evolved various forms of expression in different species.
- Emotions serve an adaptive role in helping organisms deal with key survival issues posed by the environment.
- Despite different forms of expression of emotions in different species, there are certain common elements, or prototype patterns, that can be identified.
- There is a small number of basic, primary, or prototype emotions.
- All other emotions are mixed or derivative states; that is, they occur as combinations, mixtures, or compounds of the primary emotions.

- Primary emotions are hypothetical constructs or idealised states whose properties and characteristics can only be inferred from various kinds of evidence.
- Primary emotions can be conceptualised in terms of pairs of polar opposites.
- All emotions vary in their degree of similarity to one another.
- Each emotion can exist in varying degrees of intensity or levels of arousal.

These aspects of emotion will be the topic of discussion in Chapter Three, and this conceptualisation of emotion will form the focus of this research study.

1.6.3. Cardiology

Coronary Heart Disease can be defined as a condition that is characterised by atherosclerosis (Schlebusch, 1990). Atherosclerosis is a degenerative and often symptomless disorder where the walls of the arteries thicken. This leads to complications, including angina pectoris and myocardial infarction. According to Van Sittert (2001), the psychosocial impact of this on the individual and his family is undeniable.

This research study will focus on those aspects of Coronary Heart Disease that impact on an individuals' psychological make up, as the individual moves along the road of recovery, from first hearing about the disease, to having to come to terms with it, to undergoing extremely invasive surgery, to rehabilitation. Chapter Four will elaborate on these cardiological aspects as they pertain to this study.

1.7. OVERVIEW

The research study will be approached as follows:

- Chapter One gives an exposition of the problem. It aims to introduce the reader to the research, and aims to explore, formulate and state the various aspects of the study. Themes relevant to this field of study are defined.

- Chapter Two examines the construct Self-Concept, as it has been conceptualised by theorists and researchers, and how it relates to this research study.

- Chapter Three explores various aspects of and perspectives on emotion, and focuses on the Psychoevolutionary Theory of Emotion.

- Chapter Four describes cardiology by referring to aspects such as medical factors, risk factors, psychosocial implications, and the role of the cardiological psychologist.

- Chapter Five refers to the methodology used in the research study.

- Chapter Six records the findings of the investigation, and provides a discussion and interpretation thereof.

- Chapter Seven offers the conclusions and recommendations of the research study.

CHAPTER 2

SELF-CONCEPT

2.1. INTRODUCTION

The aim of this chapter is to provide the reader with an overview of literature relating to various aspects of self-concept. The self-concept will be discussed firstly in terms of important considerations that have to be kept in mind when attempting to define it. This will be followed by a brief discussion of the development of the term self-concept in psychological thought and theory. Lastly the chapter will provide a discussion on how the self-concept can be used to understand the psychological make-up of an individual in a cardiological population.

2.2. SELF-CONCEPT

2.2.1. Introduction

Self-concept as an important aspect of psychological functioning has been a topic of research for many years within the social sciences (Byrne, 1996). Research has shown that the self-concept is not a simple construct to define. An overview of literature identifies a multitude of thoughts on what exactly the self-concept is, and how it can be used. It is a complex psychological construct, and to gain a better understanding of the self-concept, it is necessary to examine the historical development of the self-concept.

2.2.2. Considerations of Defining Self-Concept

Some of the difficulties in defining self-concept relate to the absence of a universally accepted definition of what the term self-concept refers to (Byrne,

1996). Psychological literature mentions a multitude of definitions for what it is that the term self-concept refers to (Hansford & Hattie, 1982). This is further complicated by a tendency amongst researchers to exchange, at random, various 'self terms' including self-concept, self-estimation, self-identity, self-image, self-perception, self-consciousness, self-esteem, self-imagery and self-awareness (Burns, 1982).

Of these, probably the most prominent debate in literature refers to the discrepancy between self-concept and self-esteem. According to Hattie (1992) many researchers do make a distinction based on conceptual grounds although construct validity research has been unsuccessful in finding an empirical basis for such a distinction to be made. As a result many researchers use these two terms interchangeably.

Another difficulty arises in the fact that the term self-concept has been assimilated into common everyday language and that 'everyone knows what it is.' This creates a culture where many researchers do not see the need for supplying a clear theoretical definition of what they are measuring. As self-concept is a psychological concept that is based on theoretical assumptions, it is not directly measurable. Measurement will be influenced by the researcher's definition of the term self-concept, and it's underlying constructs. As will be discussed in more detail later, researchers often differ in terms of what constitutes the self-concept. The implication of this is that it cannot be assumed that two different studies that both use the term self-concept are referring to the same construct. This creates difficulties when the time comes to compare various studies relating to the topic (Byrne, 1996).

2.2.3. The Development of the Self-Concept in Psychological Theory

From 1890 to present day, psychological research and thought on self-concept have been plentiful. The following discussion will sketch the history of the self, from the work of William James late in the 19th century to more contemporary theories. Due to the wealth of work that has been done on the subject it is impossible, as far as this research project is concerned, to refer to all contributing researchers and authors. For the sake of this study the focus will be on some of the specific and unique contributions that have shaped our current day understanding of the self-concept.

2.2.3.1. The Pioneer Work of William James

William James was the first psychologist to explore the self-concept, as early as 1890. His writings and theorising on the self-concept formed the foundation upon which other researchers could build. He considered the global self as being composite of two integrated parts specifically the 'Me' and the 'I' (Jacobs & Vrey, 1982). The 'I' is the pure ego, the subject that is actively involved in experiencing, sensing, feeling, thinking, deciding, remembering, and planning. The 'Me' is the object of that pure experience on a conscious level. In this way the self is always both Subject (I) and Object (Me). This recognises the fact that human beings have consciousness and that this permits us to be aware of the world around us, as well as our place in this world. The self will always be both I and Me. Consciousness cannot be seen in an abstract form without content, just as content cannot exist without consciousness that permits awareness of it.

James, (in Hattie, 1992) made a distinction between the spiritual self, the material self, the social self and the bodily self, and stressed that the self is a dynamic object that can change through the past as well as through future expectations.

James understood the spiritual self to be that part of the self that is involved in thinking and feeling – that which the self most truly seems to be (James, 1890). The spiritual self is the nucleus around which the other parts of the empirical self assemble, as it is the origin of interest, effort, will and choice. The spiritual self can be seen to be a blend of an individual's intellectual, religious and moral aspirations.

The meaning individuals attach to material possessions, such as clothing, cars and houses, is what James implied by referring to the material self (James, 1890). A boy who wears a cowboy outfit easily becomes a cowboy, and a girl with a doll's house can easily become a mother. For a lot of people the material self is very prominent in their global self-concept. Burns (1979) cites the example of an overweight middle-aged man who suddenly buys an expensive sports car as an attempt to amend his self-concept. He might become younger and more fashionable in his own eyes every time he gets behind the steering wheel.

A person can have numerous different social selves, depending on how many people and groups this person interacts with (James, 1890). It is the recognition one receives from significant people. If an individual cares about the opinion of a person or group, he will want to interact with them in a certain manner, which might be different from his interaction with another person or group.

The importance of one's body image was emphasised by James when he referred to the bodily self (James, 1890). Adults, as well as children, spend a lot of time and energy on activities that will make them look more attractive. One need only to page through a magazine to see how many adverts are aimed at helping people improve their appearance. From hair gels to anti-wrinkle cream to weight-loss tablets, the market is flooded with products that allow people to change aspects of themselves that they feel conscious about. The awareness of the bodily self can only develop by experiencing feelings and bodily sensations, often through the interaction of other people.

According to James (Burns, 1979), these four selves cannot be totally separated, as they combine in a unique way in each individual to form a global self-concept.

2.2.3.2. Symbolic Interaction and the Self-Concept

The work of James was inestimable in laying the groundwork for later theories on the self-concept to arise. The Symbolic Interactionism school of thought further expanded his ideas, focussing on the influence of interaction between individuals in the development of the self-concept (Cooley, 1966). As a result of this, self-conceptual development could be included into sociological theory, thereby changing the way in which theorists approached the relationship between an individual and society.

The idea of Symbolic Interactionism is founded on three basic premises (Cooley, 1966). The first of these premises is that humans will respond to the environment around them based on the subjective meaning that they attach to elements in this environment. Secondly, these meanings are formed through the process of social interaction with other elements in the environment. Thirdly, that, in turn, societal and cultural meanings can be modified through the individual interpretation that is placed within the context of this shared social interaction.

In the words of Cooley (in Burns, 1979, p. 13) "…self and society are twin born…and the notion of a separate and independent ego is an illusion". As indicated by this quote, the Symbolic Interactionism made it very clear that an individual's self-concept cannot be viewed as being separate from social factors. The basic premises emphasise the subjective manner in which individuals attach meaning to their social environment, through interaction with elements in the social environment, and how this in turn can change social and cultural meanings, if there is a sense of shared meaning being created.

The reciprocal relationship between an individual and society is undeniable (Cooley, 1967). Society has the ability to change an individual's self-concept, but the individual also has the ability to shape society. The one cannot exist, or develop, without the other. This very important contribution to self-conceptual theory implies that one cannot assume that an individual's self-concept will remain unaffected by society. Changes in the individual's environment must always be taken into account when attempting to gauge his self-concept, and the person must be defined in terms of being in a mutually dependent relationship with society (Burns, 1979).

2.2.3.3. Erikson's Views on Identity

Erik H. Erikson, rather than using the term self, referred to the identity in his writings on this subject (Erikson, 1982). According to Burns (1979), he was one of the only Neo-Freudian psychologists to spend time on conceptualising the self as object. He viewed the central ego as giving coherence to experience on a conscious and unconscious level, and similar to the Symbolic Interactionistic perspective, places the emphasis on the role that a person's environment has in developing his identity (Engler, 1999). He wrote in this regard: "…We deal with a process located in the core of the individual and yet also in the core of his communal culture…" (Erikson, 1968, p. 22). Erikson believed that the ego does not just defend against anxiety, but also has an adaptive role, in leading to consistency in behaviour and conduct. Rather than focussing on the psychosexual development of a person, as Freud envisioned it, Erikson placed the focus of his theory on the psychosocial development of that person's identity. He noted that even though the identity is located in the core of the individual, it is also in the core of his community and it's culture (Jacobs & Vrey, 1982). He also stresses the importance of the meaning that the individual attaches to this culture, as he views identity as arising from achievements that have meaning within that specific culture.

Erikson (1968, p. 50) defined identity as "…awareness of the fact that there is a self-sameness and continuity to the ego's synthesizing methods…and that this style coincides with the sameness and continuity of one's meaning for significant in the immediate community". Identity then is a result of a gradual integration of an individual's identifications. Erikson stressed the importance of children coming into contact with adults that they can identify with, in order to allow them to develop an identity that will fit into a certain cultural context. According to Jacobs & Vrey (1982), identity can simply be described as the answer to the question: 'Who am I?'. Identity then is the process through which an individual discovers who they are, and how they fit into society. This process is a continual process of cycling through several life-stages, together with the conflicts that should be resolved during these stages.

Based on this, Erikson (1982) described eight stages of identity development, as well as conflicts, which are unique to each stage, and qualities that will emerge in the individual upon resolving these conflicts. These stages, as well as the age at which they normally occur are shown in Table 2.1.

Stages of Identity Development	**Age**
Basic Trust versus Mistrust	1 year
Autonomy versus Shame and Doubt	2-3 years
Initiative versus Guilt	4-5 years
Industry versus Inferiority	Latency (age)
Identity versus Role Diffusion	Adolescence (age)
Intimacy versus Isolation	Early Adulthood (age)
Generativity versus Stagnation	Adulthood (age)
Integrity versus Despair	Later Years (age)

Table 2.1: Erikson's Stages of Development

Erikson conceptualised the process of identity formation as being far more unconscious than the Symbolic Interactionistic view did. This process entails an individual trying to find a compromise between his actual self and ideal self (Jacobs & Vrey, 1982). He was very critical of terms like self-conceptualisation, self-image and self-esteem, as they provided a static view of something that he saw as being a continuous evolving process (Burns, 1979). To him the specific content of experience was less important in identity formation than the capacity of an individual to recognise continuity. Erikson recognised identity formation to be a life-long process, one that every individual will be faced with. He envisioned the identity to be dynamic, and integral in a person becoming an individual, and being, ultimately, able to answer the question 'Who am I?'

2.2.3.4. The Phenomenological Perspective of Rogers

Carl Rogers used the notion of phenomenology, which is based on the self-concept as a core component, to develop his client-centred approach to psychotherapy (Rogers, 1961). Our present understanding of the self-concept owes much to Rogers' work and experience in clinical cases.

Rogers viewed the self-concept as organised configurations of perceptions of the self (Rogers, 1961). This means that the self-concept is a composite of different elements, such as an individual's perception of his characteristics and abilities and how the self relates to others and the environment. Rogers viewed the self as a core factor in the formation of personality and in the determination of behaviour. He developed his theory of the self over many years, and in 1959 produced his most detailed and systematically formulated theory, in which he identified the drive to self-actualisation as the sole human motive (Burns, 1979).

Throughout the works of Rogers, he placed a strong emphasis on the self as being phenomenological of nature (Rogers, 1961). He captures the essence of phenomenology (Burns, 1979, p. 37) by stating that "…man lives essentially in

his own personal and subjective world". As a result of the self-actualising motive, the self becomes differentiated through different kinds of interaction with the environment, including social interaction. The self-concept that is formed through this process is of more importance in determining behaviour and personality than a 'real' self. According to Burns (1979), the existence of a 'real', totally objective self is merely a philosophical question, since direct observation is impossible.

The self-concept then, as formed through interaction with the environment, will also be the most important determining factor of how an individual will respond to the environment. An individual will develop, according to Rogers (1961), a need for positive regard from others. This need can be either learned through internalisation and introjection of experiences of positive self-regard by others or it can be an inherent tendency, as an important aspect of an individual's need to self-actualise. As can be expected, this interaction and need for constant feedback and evaluation from the environment can cause discrepancies between the needs of the organism and the need of the self-concept for positive self-regard (Burns, 1979). This incongruence between self and experience can cause what Rogers called psychological maladjustment. Psychological maladjustment occurs as a result of an attempt by the self to defend against experiences and evaluations from the environment that might be inconsistent with it. This means that an individual might distort or deny some experiences and evaluations from the environment by incorrectly interpreting them.

The self-concept is a configuration of different aspects of the self (Burns, 1979). When one aspect of the self is altered, this can affect the nature of the whole self-concept. In this way, aspects of the self-concept can never be fully viewed as separate entities, as they are intertwined to form the whole.

Rogers (1960, p. 2) defined the self-concept comprehensively with the following statement:

> [The self-concept is] the organised consistent conceptual Gestalt composed of perceptions of the characteristics of the I or Me and the perceptions of the relationships of the I or Me to others and to various aspects of life, together with the values attached to these perceptions. It is a Gestalt, which is available to awareness though not necessarily in awareness. It is a fluid and changing Gestalt, a process, but at any given moment it is a specific entity.

2.2.3.5. The Self-Concept as Attitudes Towards the Self

According to Burns (1982), self-concept can be placed within the realm of attitudes, when it is viewed as a composite of self-image and self-evaluation. Jacobs and Vrey (1982) reiterated this by referring to attitudes as a cognitive organisation of concepts related to specific objects, including the self. According to Burns (1979), when the self-concept is seen as a set of self-attitudes, there are certain ideas that need to be clarified. These are that an attitude will always have a cognitive facet, an affective facet and an evaluative facet. These three important facets of attitudes should be taken into account when addressing the issue of self-concept.

2.2.3.5.1. The Facet of Cognition

An individual's self-concept, on a cognitive level, contains a certain presentation of that person (Burns, 1979). This presentation might not always be a true presentation of the person, as it can be based on objective evidence or subjective opinion. Self-concept based on objective evidence might be reflected in a statement like: 'I am a male', or 'I am 42 years old', that people can easily be in agreement on. Subjective opinion, on the other hand, is indicated by the

almost endless list of adjectives that individuals use to describe themselves and others. A person might present himself as being considerate, strong, caring or any of a number of descriptions that are not linked to objective evidence. In this vein, a person can make several general conclusions about himself and others. These statements are based on the consistent and habitual manner in which people use language to describe themselves and others. This presentation also extends towards a person describing his own attributes, self-conceptualisations, role and status characteristics, possessions and goals (Burns, 1982).

2.2.3.5.2. The Facet of Affect

Burns (1979), asked whether it is possible for any self-description not to have some kind of emotional implication. For instance, living in a certain area, which can be seen to have no affective component on a superficial level, can have an affective component when the influence of living in an area on that individual's self-concept is examined. The affective component of an attitude exists because of the perceived intensity of the cognitive component. Living in a high-class neighbourhood can cause a person to have a strong emotional expression of pride, while living in a low-class area might cause a person to present himself less favourably.

2.2.3.5.3. The Facet of Evaluation

The subjective nature of these presentations becomes obvious when different people are asked to describe one individual (Burns, 1982). A person might be described as being hard and uncaring by an employee, yet sensitive and loving by a spouse. Even though an individual can have a self-concept based on concrete, objective demographical information like age and gender, he will probably still attach some subjective meaning to it. One person might feel that he is over-the-hill at the age of 30, where another might feel that life is just beginning.

The influence of societal norms in shaping the attributes that an individual attaches to himself cannot be denied (Burns, 1982). A person might evaluate some personal attributes as desirable or undesirable, based on the views of society. A characteristic such as body weight is an example of this, in the light of how the media can dictate whether thin or curvy is the 'in' thing. How a person evaluates himself can be made in relation to either absolute or relative standards (Marsh, 1993). Academic performance of fellow students can supply an individual with an absolute evaluation of his own performance, where how the student perceives his parents' evaluation of his performance might be more relative.

2.3. CONCLUSION

The self-concept has been shown to be a construct that is central to gaining understanding of how individuals view themselves, and fit into society. The different perspectives on the self-concept that were discussed serve to illustrate how complex it would be to develop a comprehensive definition and theory of the self-concept. It does not fall within the scope of this research project to attempt to find such a definitive description of the self-concept. Rather the researcher would like to emphasise some similarities in the above discussion that can further our understanding of the self-concept, as it relates to the research project in question.

As early as 1890, William James conceived the self-concept to a core part of an individual that influences not only internal processes, but also how that individual relates to the world around him. The Symbolic Interactionists further stressed the influence of interaction with other people in a social environment. They also felt that this interaction not only has the power to change the individual's self-concept, but also has the power to change society. Erikson placed his focus on how the social/cultural context changes a person's self-concept. Rogers wrote of

how the self is differentiated through social interaction, and the influence of societal norms on the development of attitudes was also stressed.

From this it follows that the self-concept can never be seen as a separate entity, one that exists in isolation within an individual. All of the discussed theorists became aware of how the self-concept will always be subject to changes in a person's environment, and the way in which the person interacts with that environment. The sample group that forms the focus of this research project all fall within a very specific environment. They have all been confronted with serious health problems, surgery, a long road to recovery, and continued rehabilitation. This has shaped their environment in such a way that it can be assumed that it did have a profound impact on their self-concept.

Also of interest is how all of the theorists referred to self-concept as having a subjective component. James introduced this concept by splitting the self into two parts, the 'I' and the 'Me', to illustrate how the subjective experience of events can shape the self. The Symbolic Interactionist perspective explained how an individual would react to the environment based on the subjective meaning that he attaches to it. The self-concept as envisioned by Rogers will differentiate depending on the subjective social interaction that an individual has with others. In terms of attitudes, the self-concept will almost always have an affective, subjective reaction to the cognitive component.

Even though the sample group is placed under the umbrella term 'sample group', it is still made up of several individuals, who all experience their unique environment in a subjective manner. Never can two people's experience of an event be said to be exactly the same. It can be assumed that different people, while faced with a similar health problem, will react in a different way, and will have a different development in terms of self-concept.

Also of importance to this study is how all of the theorists conceived of the self-concept as being dynamic and ever changing. Erikson understood the self-concept (identity) to develop throughout a person's life span. The self-concept can never be left unaffected by changes in the environment, just as changes in some parts of the self-concept will have an impact on other parts, as well as the global self-concept.

In this way the self-concept of the sample group cannot be said to have been static since the cardiological problems became apparent. With every interaction, every test, every exercise session, the self-concept has the ability to change and adapt.

Theorists like James and Rogers are in agreement that the self-concept cannot be regarded solely as a global construct. James identified separate aspects of the self, and Rogers looked at how the self-concept is a configuration of different aspects of the self that can never be separated.

The study will look at how the sample group's self-concept has been impacted, by not just looking at a global self-concept, but by examining different components, such as social, physical, values, personal and family components.

In summary, the self-concept has the following important features:

- The self-concept can never be seen in isolation from the external environment.
- The self-concept is based on the subjective meaning that an individual attaches to the environment.
- The self-concept is dynamic and ever changing.
- The self-concept is a composite of intertwined parts, which can never be viewed as totally separate.

CHAPTER 3

EMOTION

3.1. INTRODUCTION

This chapter will focus on the different components of and perspectives relating to emotions, followed by an in-depth discussion on the Psychoevolutionary perspective on emotions. This chapter will also discuss the pragmatic implementations of this perspective as to how it can be used to describe aspects of a person's psychological make-up, through the use of a circumplex model.

3.2. EMOTION

3.2.1. Introduction

Emotion is a complex phenomenon (Westen, 1996). Even though most people have an intuitive idea of what emotion is, it can be (just like self-concept) very difficult to define. Emotion can be overt, for everyone to see, or it can be hidden away. It can be real or it can be fraudulent. It can be a blend of different feelings, which people can communicate through an array of modalities, like using body language or even vocal tone. To understand emotion, it is necessary to examine an overview of how it has been understood in psychological thought. Westen (1996, p. 407) defines emotion broadly as:

> Emotion…is an evaluative response (a positive or negative feeling) that typically includes some combination of physiological arousal, subjective experience, and behavioural or emotional expression.

3.3 EMOTIONAL COMPONENTS

The above-mentioned definition that is used by Westen (1996) to describe emotion implies three inherent components. These components are a physiological component, a subjective experience, and an emotional expression. These components will be discussed in turn to further our understanding of what is meant by the construct.

3.3.1. Physiological Components

William James, in 1884, maintained that emotion is rooted in a bodily experience (Wolman, 1973). His theory on emotion is sometimes called the peripheral theory of emotion as it sees the origin of emotion in the peripheral nervous system. This view is also known as the James-Lange theory of emotion, since a Danish physiologist by the name of Carl Lange conceived a similar theory of emotion at about the same time as William James (Oatley & Jenkins, 1996). Both of these theorists held that any stimulus from an individual's environment that can induce emotion would cause visceral (physical) reactions and voluntary behaviour, such as running away. It is this physical sensation that causes the person to feel aroused, and the arousal that can be subjectively experienced as emotion, such as fear. A person who is confronted by a mugger might run away, and the running away causes fear. In other words; people do not run because they are afraid, rather they are afraid because they run away.

This theory was later challenged by Canon, in 1927, and Bard, in 1934, who indicated that the autonomic responses that a person shows occur relatively slowly, only one or two seconds after exposure to stimulus (Wolman, 1973). Emotional responses, on the other hand, are almost immediate, and precede both autonomic reactions and associated behaviour, like running away. According to the Cannon-Bard theory of emotion, it follows that emotion-inducing stimuli will *simultaneously* evoke an emotional experience, such as fear, and a

bodily response, like a racing pulse. According to Westen (1996) the Cannon-Bard theory has proven to be the more accurate of the two theories, and their thoughts on the relative speed of autonomic and emotional responses are accepted as valid.

3.3.2. Subjective Experience

Westen (1996) calls the subjective experience of emotion the most familiar component. It is basically what it feels like to be cheerful, sad, elated or angry. People are very different in their experience of emotional intensity. Emotional intensity can range from people with severe personality disorders, whose emotional intensity is extreme, to people with no expression of emotional intensity. Such individuals can be diagnosed with a psychological disorder called alexithymia, which literally means ‘no language for emotions’.

Research has shown that acknowledging and examining emotion can have a positive impact on the health of an individual (Pennebaker, 1992). Emotions that are not acknowledged can eat way at a person subconsciously.

3.3.3. Emotional Expression

This component of emotion refers to the overt behavioural signs of emotion. Emotion can be expressed in an almost endless number of different ways, which includes facial expressions, postures, gestures, and tone of voice (Westen, 1996).

Some theorists argue that the face is the seat of emotional expression (Tomkins, 1980). As early as 1924, Landis (in Wolman, 1973) researched the manner in which emotion is expressed on an individual’s face. He aroused genuine emotion in human subjects and photographed their facial expressions. Emotion was aroused through exposure to a variety of situations, including smelling ammonia,

viewing pictures of skin disease and decapitating rats. By examining the photographs he made deductions on which facial muscles are involved in the formation of which emotional expressions.

The facial expression of emotion is uniform enough across individuals and cultures that it is possible to directly assess the valence (either positive or negative) and the intensity of the emotion (Westen, 1996). Expressions that are recognisable across cultural lines have been identified as surprise, fear, anger, disgust, happiness and sadness, as well as shame and interest in a related study. These findings support the idea that certain emotions are biologically linked to distinct autonomic states as well as certain facial movements (Oatley & Jenkins, 1996). Even though certain aspects of emotional expression are universal, the impact of culture and gender does mean that some individuals will rather refrain from expressing emotion. It might be easier for a female in a Western culture to show sadness, whereas it is not always socially appropriate for a male, as illustrated by the well-known saying ‘Cowboys don’t cry’.

3.4. A TAXONOMY OF EMOTIONS

The question may arise as to how many emotions an individual can experience? Psychologists have often tried to construct a list of basic or primary emotions. These basic emotions are the building blocks of almost endless emotional blends that can be derived by combining the basic emotions in various levels of intensity. An emotion can be defined as basic, according to Westen (1996), if it has the characteristic physiological, subjective and expressive components that were discussed earlier. One theorist that has compiled a basic list of emotions is Robert Plutchik. His work on the subject will be discussed in great detail in the following section. All theorists on this subject list anger, fear, happiness, sadness, and disgust as basic emotions, while surprise, contempt, interest, shame, guilt, joy, trust and anticipation are sometimes added to the list.

Theorists do not only place a distinction between the basic emotions, but also on whether or not an emotion is pleasant, or unpleasant (Westen, 1996). Westen continues to state that emotions can be arranged in a hierarchical fashion, where basic emotions that are universal across cultures, can contain subordinate emotions that may be unique to different cultures. In this way a positive basic emotion like love can contain culturally specific emotions like fondness and infatuation, and a negative emotion like anger can contain annoyance, hostility, contempt and jealousy. Oatley & Jenkins (1996) adds that it is important to remember that there are times when a simple distinction between pleasant and unpleasant emotions are not enough. Anger is an example of this, i.e. even though the majority of incidents of anger feel bad, it remains a powerful motivational factor that can have a positive impact on the life of an individual.

3.5. PERSPECTIVES ON EMOTION

The examination of the components of emotion and how basic emotions can fit into a taxonomic structure to support basic as well as culturally unique emotions have extended our understanding of emotion. A brief discussion on the psychodynamic, cognitive and evolutionary perspectives can offer additional insight into the nature of emotions, as well as its function in our daily lives. The cognitive perspective and specifically the Psychoevolutionary perspective of Robert Plutchik will be discussed in more detail, as it relates to this research study.

3.5.1. Psychodynamic Perspective

The basic psychodynamic understanding of emotion is that emotional experience often occurs on an unconscious level, and that even though it is unconscious, these processes can have an influence on the individual's thoughts, behaviour and health (Oatley & Jenkins, 1996). The human mind seems to guard, either deliberately or involuntarily, the individual from unpleasant emotions.

Sigmund Freud proposed that certain events, often of a sexual nature, in the life of an individual can be so damaging that they will have an emotional impact for the rest of that individual's life (Oatley & Jenkins, 1996). As noted, the individual might not even always be able to pinpoint exactly what event caused them to feel a certain way. Freud held that often emotion is felt obscurely, and can have an effect that is not understood. The emotions and their meaning only become clear through the process of expressing them verbally or otherwise.

3.5.2. Cognitive Perspective

Cognitive theorists study the impact of emotion on various cognitive processes, including memory and judgement (Westen, 1996), as well as how cognition influences emotion (Oatley & Jenkins, 1996).

According to the Schachter-Singer theory of emotion, emotion is based on two crucial factors – physiological arousal and cognitive interpretation (Schachter & Singer, 1962). The implication of this is that whenever a person experiences non-specific physiological arousal, they will attribute the feeling to something in the environment. If a person is confronted with a large aggressive bear, the physiological arousal can be interpreted as fear, if the person finds himself on a roller coaster the same arousal could be interpreted as excitement. In the same way, to be able to distinguish between similar emotional states, such as feeling fatigued or depressed, requires a person to cognitively interpret the sense of physiological arousal because they share several features.

In the same way that the interpretation of emotion is subject to cognition, so too can a person's emotional state have an effect on cognitive processes (Westen, 1996). Mood and emotion can influence both encoding and retrieval of information in memory, as well as thinking. A person, who is in a good mood, will tend to store more positive information and find it easier to retrieve this

information. This means that a person who was asked to remember a list of words will be more likely to recall positive words on the list, if he was in a positive mood during the encoding or the retrieval process.

3.5.3. Evolutionary Perspective

The evolutionary perspective is derived from the works of Charles Darwin, and his view that emotion primarily has an adaptive purpose (Darwin, 1965). Darwin stressed that all animals, including humans, use emotion to communicate. An individual can signal his readiness to fight, run away or attend to a loved one's needs through different postural, facial and other methods of communication. These modes of communication, as postulated in evolutionary theory, are central to regulating social behaviour and increasing the individual's chances of surviving.

When postulated in evolutionary terms, emotion can also be seen as a powerful source of motivation, as an internal communication that action needs to be taken. According to Westen (1996), the terms 'motivation' and 'emotion' share the same Latin root *'movere'*, which means 'to move'. In this way different emotions are ways in which an organism can become motivated to deal with a situation in an appropriate manner, with the end result of improving chances of survival. Westen (1996) illustrated how the behaviour of humans and animals are influenced by an emotional response to certain situations. These are reflected in Table 3.1 below.

Stimulus Event	Emotion	Behaviour
Threat	Fear, terror, anxiety	Fight, flight
Obstacle	Anger, rage	Biting, hitting
Potential mate	Joy, ecstasy, excitement	Courtship, mating
Loss of valued person	Sadness, grief	Crying for help
Group member	Acceptance, trust	Grooming, sharing
New territory	Anticipation	Examining, mapping
Sudden novel object	Surprise	Stopping, attending

Table 3.1: Influence of emotional response on behaviour

The researcher will make use of the evolutionary perspective on emotions. The reason for this is that the cardiological sample that is participating in this study have all been subject to a similar stimulus event. Using the evolutionary perspective, it can be deduced that they all had an emotional reaction to this event, which increased their chances of survival. The psychometric instrument, the Emotions Profile Index (EPI), that the researcher is making use of for this research study, is based on this view, and can yield information relating to how the cardiological sample has reacted to being subject to cardiological surgery, and the long road to recovery following that. For this reason, the specific views of Robert Plutchik, on whose theory the instrument is based on, will be discussed in more detail.

3.6. A PSYCHOEVOLUTIONARY PERSPECTIVE

3.6.1. Complexity of Emotion

Robert Plutchik indicated in 1974 that central to a basic understanding of emotion is that it is a subjective feeling of a certain kind (Plutchik & Kellerman, 1974). People use labels, or words, such as angry, disgusted and afraid to describe this kind of feeling. Plutchik does feel, however, that this description of emotion is too narrow, and that a broader conceptualisation is necessary. Emotion, according to

Plutchik, cannot merely be viewed in terms of the words people use to describe this experience, as it is a complex construct that is based on various classes of evidence.

These classes of evidence refer to information that an individual receives from the environment. This may include verbal reports that a person gives, relating to an inner feeling, as well as this feeling being expressed in behaviour and how the person reacts to his peer group. An individual's knowledge in terms of how to react under certain stimulus conditions, and what is typical in such a situation can also yield evidence that influence how an emotion is constructed.

When only one class of evidence is used to measure emotion, it yields a picture that does not allow for the complexity that several classes of evidence bring. Plutchik (1980, p. 4) refers to how complex even a layman's description of emotion can be, for example when depression can be described as such:

> I feel empty, tired, sleepy, insignificant, alone, out of touch, not hungry, can't smile, want to withdraw.

These terms, which are used in everyday language to describe an emotional state, present a complex picture comprising of several elements. There can be physical elements (tired, sleepy), attitudes towards the self (insignificant, out of touch), impulses to action (want to withdraw), and physiological changes (not hungry) as well as others. According to Plutchik (1990), this makes it clear that referring to only one class of description will only yield a partial picture of the total state called an emotion. In this way an emotion cannot be viewed solely as a verbal report of a subjective experience. A person's report of his emotions can be influenced by several factors. A person's verbal report of emotion might in some cases be a deliberate attempt to deceive another person, or can be an unconscious distortion for various reasons. Plutchik further states that one of the reasons why emotional states are difficult to describe unambiguously through

verbal reports, is that more than one emotion can transpire at the same time, and emotions rarely occur in a pure state.

3.6.2. Emotion within the Context of Evolution

Robert Plutchik (1980) feels that it is of importance to view emotion within the broader context of evolutionary theory, as the existence of emotion can be understood in lower animals, as well as in humans. In Darwin's conception of natural selection, every feature of every modern day organism has survival value, including its emotional behaviour. Therefore, from an evolutionary point of view, emotions should be viewed as having an adaptive function in the life of each organism.

Emotion then functions to increase an organism's chances of survival through appropriate reactions based on emergency situations in the environment (Plutchik, 1990). Emotions, within evolutionary theory, are conceptualised as adaptive patterns as used by an individual to deal with basic survival issues, to increase the likelihood of the continued existence of the organism. This functional view of emotions, as postulated by Darwin, was published in 1872 but was ignored by psychologists until some time after the Second World War. Since this time, his views have been shown to be valid, and have sparked an interest amongst researchers to contribute to this viewpoint (Plutchik, 1997).

Plutchik (1980) has identified some adaptive reactions that are present in humans as well as lesser animals, that play a functional role in keeping the organism alive. These include protection responses (flight, avoidance, hiding, playing dead), destruction responses (clawing, biting, hitting) and reproduction (courting, copulating, giving birth).

These thoughts have led Plutchik to derive his theory of emotion, which consist of ten assumptions.

3.6.3. Postulates of the Psychoevolutionary Theory of Emotion

The postulates that the Psychoevolutionary Theory of Emotion are based on are (Plutchik, 1980, p. 8-9):

- The concept of emotion is applicable to all evolutionary levels and applies to animals as well as to humans.
- Emotions have an evolutionary history and have evolved various forms of expression in different species.
- Emotions serve an adaptive role in helping organisms deal with key survival issues posed by the environment.
- Despite different forms of expression of emotions in different species, there are certain common elements, or prototype patterns, that can be identified.
- There is a small number of basic, primary, or prototype emotions.
- All other emotions are mixed or derivative states; that is, they occur as combinations, mixtures, or compounds of the primary emotions.
- Primary emotions are hypothetical constructs or idealised states whose properties and characteristics can only be inferred from various kinds of evidence.
- Primary emotions can be conceptualised in terms of pairs of polar opposites.
- All emotions vary in their degree of similarity to one another.
- Each emotion can exist in varying degrees of intensity or levels of arousal. (p 8-9)

3.7. A CIRCUMPLEX MODEL OF EMOTION

3.7.1. Emotions and Personality

According to Plutchik, (1997) it is almost impossible to draw a clear distinction between emotion and personality. He discusses emotion and personality, as both being of importance in interpersonal relations. His reasoning is that there is a remarkable overlap in the usage of language as it relates to emotion and personality, and that both have a functional, evolutionary role. These two aspects of Plutchik's theory will be discussed to clarify what he means when referring to emotion.

3.7.1.1.Overlapping Language

One of the primary of these reasons that Plutchik refers to is the remarkable overlap in language as used to describe emotions and personality (Plutchik, 1997). Several cited studies indicate that many words that are used to describe emotions can also be ascribed to personality, for instance words like 'gloomy', 'resentful', and 'calm'. The complexity of language implies that words can be attributed to more than one thing, based on the context within which they are used.

As an example of this, Plutchik uses the word *anxiety,* as defined in Webster's International Unabridged Dictionary, to illustrate this point. Anxiety can be defined as (a) "A painful uneasiness of the mind"; (b) "a pathological state of restlessness and agitation"; and (c) "an expectancy of danger without adequate ground explained as a transformed emotion derived from repressed libido." (in Plutchik, 1997). Anxiety then can be defined either as a temporary condition, or may reflect a long-lasting, more permanent state. Common understanding of emotional states revolve around it being a transient reaction to a certain situation,

while traits are seen to be stable patterns of behaviour that can become apparent in a number of situations.

According to Plutchik (1997), whether we refer to a human condition as an emotion or a personality trait is simply a matter of timeframe. Whenever a person is asked to describe how he is feeling *now* or in the last few days, he will tend to relate his emotional state. When a person is asked, on the other hand, how he *usually* feels, his answer should yield information regarding his personality traits, rather than an emotion.

3.7.1.2.Functional Significance of Emotion and Personality

As discussed earlier, the functional role that emotion plays in the life of an individual is to optimise the likelihood of the organism surviving (Plutchik, 1990). Emotions are conceptualised within this framework as adaptive patterns of behaviour that allows an organism to successfully deal with survival problems in the environment. Emotions are fundamentally communication processes, which either increase or decrease an individual's chances of survival (Plutchik, 1997).

The manual of the Emotions Profile Index illustrates how functional language can be used to describe emotions, compared to subjective and trait language (Plutchik & Kellerman, 1974). This is reflected in table 3.2.

Subjective Language	Trait Language	Functional Language
Fear	Timid	Protection
Anger	Aggressive	Destruction
Joy	Gregarious	Reproduction
Sadness	Depressed	Reintegration
Acceptance	Trustful	Incorporation
Disgust	Distrustful	Rejection
Expectancy	Controlled	Exploration
Surprise	Dyscontrolled	Orientation

Table 3.2: Subjective, trait and functional language for describing emotions

Emotions can also be attributed a functional meaning as a way of negotiating interpersonal relationships (Nesse, 1991). An emotion such as love can maintain good relationships even during rough times. In the same way anger can be functional by preventing exploitation, and anxiety and guilt can be a motivational factor for individuals to fulfil commitments and to stay loyal to those close to them.

In the same way various contributions have been made to the conceptualising of the functionality of personality traits. Plutchik (1997) refers to the psychodynamic theory of Fenichel, who describes personality as bringing on instinctual conflict. A conflict of emotions can lead to a fixating of emotional tendencies, a process that transforms brief emotional reactions into more permanent personality traits.

Spezzano (1993), states that psychoanalysis, as a whole is a theory of affect. Psychopathology can be postulated as an attempt by the unconscious mind to regulate affect. In this sense psychopathology is functional, in that it regulates interpersonal relationships. When an individual wants to keep others invested in his personal agendas he can, for example, use love. Intimidation can be used to inhibit potentially threatening interactions that could be painful.

According to Millon (1994), personality relates to a person's enduring style of relating to others, coping with problems and expressing emotions. Based on this personality traits can be conceptualised as reasonably stable patterns of thinking and interacting that is functional in using, controlling and adapting the external environment. Personality traits, such as anxiousness, depression and self-criticism can serve a variety of functions to the individual person. They can elicit nurturance from others, justify dodging of responsibilities, rationalise poor performance or rationalise the expression of antagonism towards others.

As this discussion illustrates, both emotions and personality can be conceptualised as having a similar function in regulating social relations (Plutchik, 1997). It can further be conceptualised that personality traits are essentially persistent expressions of emotional tendencies, and thus aspects of the same conceptual domain. This does not imply that the terms 'emotions' and 'personality' can be used interchangeably, as differences can be express in relation to timeframe. An emotion is a subjective experience at a specific point in time, whereas personality refers to a crystallisation and generalisation of that experience over a longer time period.

Attempts in literature to apply this conceptualisation in a pragmatic measurement of emotion and personality will be the focus of the next section.

3.7.2. A Circumplex Model of Emotions

According to Plutchik (1990) the relationship between various emotions can be represented by using a three-dimensional cone-shaped model, as illustrated in figure 3.1.

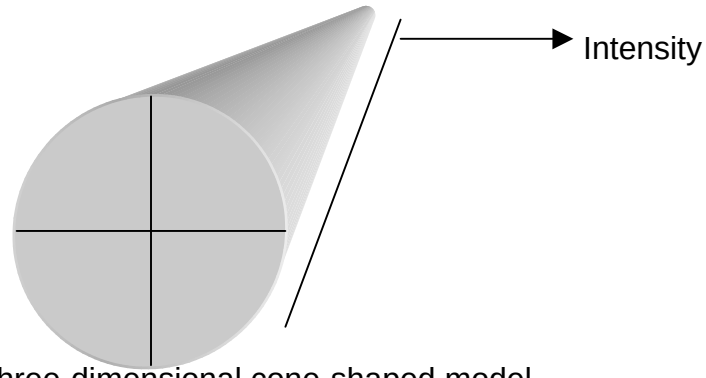

Figure 3.1: Three-dimensional cone-shaped model

Intensity of emotions can be represented on the vertical dimension of the cone, while the circle indicates degrees of similarities between emotions. Polarity, in turn, is represented by the opposite emotions on the circle. Inherent to this postulate is the notion that some emotions are primary, and that others are a blend of the primary emotions. Plutchik illustrates this by referring to the similarities between the language used to describe mixed emotions and the language used to describe personality traits. Hostility can be seen to be a merging of anger and disgust, just as guilt is a combination of pleasure and fear. Hundreds of personality traits have been shown to be associated with various emotional components.

Gurtman (1997) originally coined the term circumplex in 1954, as it was used to refer to a certain kind of non-restrictive correlation pattern with a distinctive circular ordering. This characteristic ordering is based on the geometric implications of having a correlation matrix where the correlations systematically increase and then decrease. When the correlations progressively range from a

high positive to a high negative, a circular pattern will emerge through the process of factor analysis when plotted in two-dimensional space.

Plutchik (1997) traces the history of the circumplex model, as it relates to emotions, back to the pioneering work of W. McDougall. According to McDougall (in Plutchik, 1997) a parallel can be established between emotions and colours. Emotions can, just like colours, form an indefinite variety of qualities that shade into each other. In the same way these shades can be reduced through analysis to a few primary qualities. This analogue of a colour circle can be applied to the construction of a similar circle that is based on emotions.

Schlosberg (1954) created an emotion wheel with two axes – pleasantness-unpleasantness and attention-rejection. He later added a third axis to include a dimension of intensity. This can be illustrated by using a cone-shaped model.
Plutchik (1997) used a similar model in 1958, through which he indicated the existence of eight basic bipolar emotions. These emotions are joy versus sorrow; anger versus fear; acceptance versus disgust; and surprise versus expectancy.

In a similar investigation into the circular nature of emotions, J. Block asked a group of students to describe a group of emotions based on a semantic differential scale (Block, 1957). Through correlation studies and factor analysis a circular order could be established with the following sequence: pride, anticipation, elation, love, contentment, sympathy, nostalgia, boredom, grief, guilt, humiliation, worry, envy, fear and anger. Bipolarities in this grouping of emotions include elation versus grief; contentment versus worry; and love versus boredom.

Plutchik (1997) furthered the study of the circumplex model in a study where participants were asked to rate the similarity between 146 different emotional words using a bipolar scale ranging from *opposite (-5),* through *no relation (0),* to *the same (+5).* Using this method, Plutchik was able to indicate the manner in

which emotions relate to each other as well as indicate similarities and differences in words commonly used to describe emotion. The scores were converted to a circular model, using the assumption that *no relation* relates to a 90-degree difference on the circle, and *opposite* translates to a 180-degree divergence. This implies that all areas of the circle are represented, although there are differences in terms of density. Emotional words that are similar are grouped close together, whereas opposing terms, such as *angry* and *receptive* are more or less 180-degrees apart. This is reflected in figure 3.2.

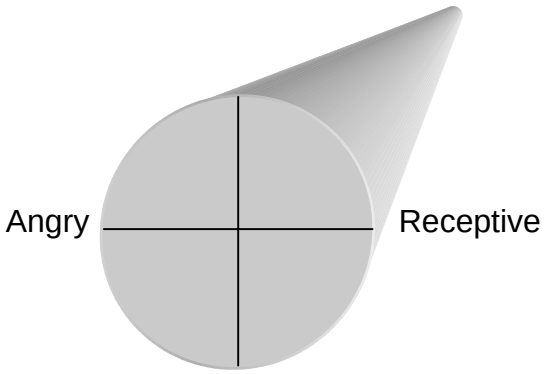

Figure 3.2: Placement of opposing emotional terms

3.7.3. A Circumplex Model of Personality Traits

Wundt, in 1903, postulated the four temperaments as described by the Greeks in terms of bipolar opposites (Plutchik, 1997). The *phlegmatic type* (controlled, persistent, calm) can be seen as the opposite of the *choleric type* (exhibitionistic, hot-headed, active); just as the *sanguine type* (sociable, easygoing, contented) can be set opposite the *melancholic type* (anxious, suspicious, serious). According to Plutchik (1997) the first investigation into the circular nature of personality traits was in 1946 by Cattell, with the development of the *Standard Reduced Personality Sphere.*

In 1951 Freedman, Leary, Ossorio and Coffey presented the circular model of interpersonal purposes. They proposed that there are 16 modes of interpersonal expression that can be represented on a circular model, with the centre of the

circle indicating normal modes of interaction and the periphery indicating more extreme modes of interaction (Plutchik, 1997). This means that a person whose score is indicated close to the core of the circle (a low score) functions within normal levels of interaction. The further away from the centre of the circle a score is found (a higher score) the more extreme modes of interaction will be indicated in that person.

Stern (1958) used a circular model as the basis for his psychological test of personality. Participants in this study were asked to describe their preference for a number of activities, such as 'driving fast', 'flirting' and 'taking care of someone who is ill'. These responses were in turn scored and ordered on a circumplex model. This model included 30 scales, with *outgoing* being opposite *withdrawn*, *aggressive* opposite *timid,* and *independent* opposite *dependant*.

A few years later Lorr and McNair (1963) developed an *interpersonal behaviour circle* that is based on an inventory of interpersonal behavioural statements used by clinicians to describe both their patients and non-patients. The items were correlated, and the resulting correlation matrix was factor-analysed, indicating a circular ordering of clusters around the first two factors. They subsequently constructed their *interpersonal behaviour circle* containing the following sectors: sociability, affection, nurturance, agreeableness, deference, submission, abasement, inhibition, detachment, mistrust, hostility, recognition, dominance, and exhibition.

Rinn reviewed the literature on circumplex structures in 1965, and suggested that the emotional, interpersonal and attitude domains can all be conceptualised through the use of similar circular models (Plutchik, 1997). He indicated that the numerous dichotomies used to describe interpersonal behaviour might simply be conceptualised as different aspects of the same circumplex.

3.7.4. Implications of using the Circumplex Model

Plutchik (1997), accentuates the following ideas about the Circumplex Model:

Firstly, that the circumplex is essentially an expression of certain kinds of relations or interactions, based upon the idea of *similarity* and *polarity.* When the elements that are being examined differ in degree of similarity to one another and also show polarities, then a circular model can be used as an analogue representation of these elements. In a statistical sense, any set of correlations of these elements should show ordered increases and decreases in the degree of correlation depending on their relative degree of similarity and polarity. Polar opposites would be indicated by a correlation score of –1.0, totally unrelated or independent elements by a correlation of 0.0, and identical elements by a correlation of 1.0. On this correlation scale of –1.0 to 1.0 the nature of the relationship between elements can be closely defined.

The second important consideration is that the idea of the circumplex does not imply that the elements need to be arranged with equidistant spacing. In the same vein it is not necessary that there be a specific number of elements represented around the circle; or that any particular set of axes should be seen as fundamental.

Whereas the circumplex is used to describe emotions and personality, it does not apply well or at all to describing physical characteristics of a person, intellectual abilities, aptitudes or cognitive styles, even though all of these have at some time been conceptualised as being part of personality at some time in the past.

Inherent to the implied concept of polarity within the circumplex is the idea of conflict between opposing elements. Conflict is also an intrinsic part of interpersonal relations. Basic opposing processes, such as approaching versus evading, taking in versus ejecting, joining versus disconnecting, and attacking

versus withdrawing can be seen as control systems that regulate social interactions.

3.8. CONCLUSION

The discussion in this chapter attempted to clarify the term emotion, and what is implied by it. It is apparent that emotion is not a simple concept to define and quantify. It would however seem that for the sake of this research project, the evolutionary perspective on emotion is most appropriate. Not only does this approach place a strong emphasise on emotion as a survival mechanism, but it also conceptualises how different emotions relate to each other, and even how opposing emotions can be placed within the same conceptual framework.

This is ideal for this research project, as the researcher is interested in the emotional make-up of the cardiological sample, and how they identify with positive and negative emotions. By using this model, the researcher can draw conclusions about how the sample has adapted, by using their emotions, and how the implications of the cardiological environment has influenced their emotional state. The cardiological environment will be discussed in detail in the next chapter.

CHAPTER 4

CARDIOLOGY

4.1. INTRODUCTION

The aim of this chapter is to provide the reader with some information relating to Cardiology, and specifically, Cardiological Psychology. The chapter provides a general overview of cardiology including the risk factors associated with Coronary Heart Disease (CHD), followed by a description of associated coronary diseased, and a discussion of surgical interventions. The experience of the patient is explored, as well as the role of the cardiological psychologist as part of the cardiological rehabilitation team.

4.2. BACKGROUND

According to the Heart Foundation of South Africa (2003), CHD is the number one killer amongst South Africans. One in every three men and one in every four woman will have some form of coronary disease by the age of 60. It is estimated that is one heart attack every 8 minutes in South Africa.

The Mortality Figures of 1994 indicated that 16,39% of all male deaths were due to Cardiovascular Disease, and 22,98% of all female deaths were due to the same cause (Heart Foundation of South Africa, 2003). Heart disease was one of the top five global causes of death in 1990, and it is projected to be the main cause of death globally in 2020.

CHD cost South Africa an estimated R4 135 to R5 035 Billion in 1991, and this figure does not even include the cost of rehabilitation (Heart Foundation of South Africa, 2003).

The cost in terms of lives and resources of CHD in South Africa is far reaching, and when combined with the emotional cost, it becomes overwhelming.

4.3. RISK FACTORS

The following risk factors are commonly associated with CHD (Dunkley, 1996):

4.3.1. Smoking

There is a prevailing perception amongst the general public that smoking is associated more with cancer than with CHD. Smoking is however one of the three primary risk factors for heart disease, and causes more deaths due to heart disease than can be attributed to cancer (Burke & Manolic, 1993). This risk becomes more pronounced the more cigarettes a person smokes per day. Approximately 7 million South Africans place themselves at risk for CHD as a result of smoking (Heart Foundation of South Africa, 2003).

4.3.2. Family History of Heart Disease

The prevalence of CHD is often found to be higher in some families than others. This can be attributed to the fact that individuals in these families share genes that make them more susceptible to CHD, and often share unhealthy eating habits (Stokes, 1990).

4.3.3. High Blood Pressure

High blood pressure, also known as hypertension, is the most constant causal factor in the development of atherosclerosis, the higher the blood pressure, the higher the risk (Stokes, 1990). This is true for both genders, across all cultures, and for individuals of all age groups. According to the Heart Foundation of South Africa (2003), 6.3 million South Africans suffers from hypertension.

4.3.4. High Blood Cholesterol

The development of atherosclerosis can often be determined through the ratio of Low-density lipoprotein particles (often referred to as LDLs or “bad cholesterol”) to High-density lipoprotein particles (often referred to as HDLs or “good cholesterol”) in the bloodstream. Low levels of HDL cholesterol is not a risk factor for the development of CHD in the presence of low LDL cholesterol levels (Dunkley, 1996). Saturated fatty acids are the main contributing factor in raising concentrations of LDL cholesterol to dangerous levels.

4.3.5. Diabetes

Diabetes as a risk factor for the development of CHD is an important independent contributing factor, especially in females (Stokes, 1990). Atherosclerosis is a common complication of diabetes, as high blood pressure is already present in more than 50% of diabetics.

4.3.6. Obesity

Stokes (1990) indicates that there is a relationship between a person’s body weight and cholesterol levels. By implication this means that an overweight person will tend to have higher cholesterol levels, which in turn heightens the risk for the development of CHD.

4.3.7. Stress

Barlow & Durand (1999) indicated that a healthy male with high levels of stress is more likely to develop CHD, than a healthy male with low levels of stress. It is however difficult to prove that stress is a risk factor, despite the fact that it is the

common perception that stress is the main cause of CHD. Most of the research on this subject has centred on the Type A behavioural pattern.

4.3.8. Personality

According to Gerber, Gerber & Kriel (1985) the so-called Type A behavioural pattern is very common in the South African context. This behavioural pattern has been linked with the development of CHD. Type A behaviour is typified by an extremely competitive nature, a feeling of always being rushed, an obsession with achievement, impatience and anger outbursts (Westen, 1996). In contrast Type B people are more relaxed, easy-going, and do not anger easily, and as a result, do not contract CHD as readily.

4.4. MEDICAL ASPECTS

4.4.1. Coronary Heart Disease (CHD)

CHD can be defined as a condition that is characterised by atherosclerosis (Schlebusch, 1990). Atherosclerosis refers to a degenerative and symptomless disorder where the walls of the arteries thicken. This leads to complications, including angina pectoris and myocardial infarction.

As this definition indicates, CHD refers to a diverse set of related symptoms and events (Dunkley, 1996). The underlying pathophysiological process is myocardial ischemia, or coronary insufficiency, which refers to an insufficient supply of oxygen to the heart muscle when it is demanded. Myocardial ischemia can be accompanied by angina pectoris (transient chest pain or discomfort), but might also be silent to the extent that the patient is unaware of it occurring. The symptoms of angina pectoris differ from person to person, and during the early stages the patient might only experience a pressure on the chest (Fleetwood, 1990). As the disease progresses, it can present as intense chest pain that can

spread to the neck or the left arm. Ischemia is often transient and localised, and in these cases the lack of oxygen is not enough to cause part of the heart muscle to die (Van Zyl, 2001). Myocardial infarction, more commonly known as a heart attack, occurs when the part of the heart muscle that receives insufficient blood flow dies.

CHD is a progressive disease that occurs over many years (Gordon & Gibbons, 1991). In time the coronary arteries fail to supply the heart muscle with enough blood, and therefore also oxygen. This failure can be attributed to a build-up of cholesterol and other fatty substances in the arterial walls. As a result of this thickening the arterial walls thicken (atherosclerosis), and this narrows the central channel of the artery through which blood flows. No single etiological factor has been isolated to indicate the mechanism through which atherosclerosis develops (Van Zyl, 2001). Neither viral nor bacterial infections can be said to be a single causal factor. A common factor seems to be the fact that arteries lose their elasticity and become thicker and harder due to age.

4.4.2. Procedures

Angioplasty and bypass surgery are mechanical “fixes” to an essentially biological problem (Angioplasty.org Patient Center, 2003). Both of these procedures can remove the immediate concern of blocked arteries, but their effect on the long-term progression of coronary heart disease remains dependant on a number of factors.

Angioplasty, or Percutaneous Transluminal Coronary Angioplasty, is a process whereby a small deflated balloon is advanced out of a larger guiding catheter to the area of narrowing in the affected coronary artery. The balloon is then inflated several times to dilate (stretch) the artery open (Van Zyl, 2001). An advantage of angioplasty over other surgical procedures is that it is much less invasive, and also more repeatable should more blockages appear as the disease progresses

(Angioplasty.org Patient Center, 2003). Dr. Andreas Gruentzig did the first angioplasty procedure over 20 years ago. He envisioned angioplasty to be an alternative to open-heart surgery in perhaps 5% of cases, but today it is used in over 50% of cases.

In more than 70% of current-day interventions, the angioplasty will be combined with the use of a stent (Angioplasty.org Patient Center, 2003). A stent is a wire mesh tube that is used to prop open an artery after it has been dilated with angioplasty. The stent is placed on the balloon while deflated, and will remain in the artery, at the site of the blockage, after the balloon has been inflated and removed. The stent then serves as permanent scaffolding for the now widened artery. This has virtually eliminated the complications associated with normal angioplasty, like the sudden and unpredictable closure of the artery.

Coronary Bypass Surgery is a specialised operation that has transformed the lives of thousands of individuals with coronary heart disease (Versluis, 1987). Veins, mostly from the arms or legs, are used to replace blocked or narrowed coronary arteries. By grafting these veins to bypass the blocked area in the coronary artery, the blood can be re-routed, and this leads to improved circulation of blood and oxygen to the heart muscle (Van Zyl, 2001). This procedure swiftly reduces the pain (angina) associated with the blocked or narrowed coronary arteries. This type of surgery hails back to 1951, when Dr. Vineberg and Dr. Miller implanted the internal mammary artery into the heart muscle (The Heart Surgery Information Homepage, 2003).

4.5. THE HEART PATIENT

The person, who comes to the hospital for coronary surgery, can be of any age and gender, and any socio-economic class (Versluis, 1987). This person is usually in his peak productive years, between the ages of 35 and 65, and at the top of his life in terms of career. In some cases the person may be close to

retirement. For a person to be diagnosed with clinically significant coronary heart disease, he will usually have one or more narrowing of the coronary arteries (Van Zyl, 2001). This implies a narrowing comprising at least 70% of at least one of the main arteries.

4.6. PSYCHOSOCIAL IMPLICATIONS OF CORONARY SURGERY

When an individual undergoes coronary surgery it has an enormous impact, not just on the patient, but also on other members of his family (Artinian, 1991). This does not only influence the life style of the family members, but also their ability to cope with the patient. This in turn can have a further influence on the physical and emotional recuperation of the patient. Coronary surgery can be a disorganising experience for the whole family and adapting to the new circumstances is a constant and complex process. Mostly for the patient, but also his family, this is a process of coming to terms with loss. The patient is faced with his own mortality, and has to face the fact that he might not survive the experience. According to Van Sittert (2001), this experience can be likened to the loss of a loved one, and the patient and his family can go through the stages of bereavement, which are based on the theory of Kubler-Ross, to come to terms with the implications of the coronary surgery:

- *Denial*: Denial is a defence mechanism that shields the patient and his family from the reality that they are faced with (Van Sittert, 2001). This is functional, as it allows the patient to get more effective coping strategies in place.
- *Anger:* After the initial shock and denial, the patient may become angry, and vent this anger onto family, friends, or health care workers (Cavanaugh, 1997). The thought of having to go through this ordeal, while so many others remain healthy seems unfair, and the patient is often faced with the question ‘Why me?’

- *Bargaining:* In this stage the patient is looking for a way out (Van Sittert, 2001). Making a deal with God is one way of bargaining. A patient who has been diagnosed with CHD might pray 'I promise to never smoke again if you take this away from me.'
- *Depression:* As the patient comes to accept the inevitability of the CHD, and associated surgery he can become depressed. According to Mckhann & Borowicz (1997), depression is very common among patients following coronary surgery. The rate of healing following an operation can also be linked to levels of depression in a patient.
- *Acceptance:* Finally it is hoped that the patient and his family will find themselves in the acceptance stage (Cavanaugh, 1997). This often follows after a long and hard process that can vary in time-span from person to person. The patient is more at peace, and better equipped to deal with the rehabilitation programme.

This indicates the extent to which undergoing coronary surgery and living with CHD can impact on the psychological well being of the patient. In the same way it can have a profound influence on his social environment and life style.

The patient's interactions with loved ones can often be affected in terms of his marital relationship, sexuality and family relations. According to Artinian (1991) the marital relationship can be placed in jeopardy due to the worry, anxiety and responsibility placed upon the spouse by having to care for the patient. CHD also places a lot of uncertainty on the spouse in terms of a partner's life expectancy and how best to care for him.

According to Van Sittert (2001), coronary surgery has a pronounced impact on the sexual life of patients and their partners. This is often due to a lower libido in men following the operation due to high levels of anxiety and depression. Certain medicines, like beta-blockers, can also be a contributing factor.

The family is the most general context within which the effects of CHD and surgery is felt (Artinian, 1991). The family is an interdependent system, and illness in one member will be felt by all. The roles in the family often have to be adapted, which can lead to frustration and resentment.

As this discussion has shown, the effects of CHD and associated surgery can never be assumed to merely have an impact on the physical body of the patient. It would seem that it is like a pebble thrown into a pond. This ripple effect is felt the most by the patient at the centre, but his family and friends are also affected. It is for this reason that we turn next to a discussion of the rehabilitation process, and how a cardiological team, such as the one found at 1 Military Hospital, can aid the patient and his family on the road to recovery.

4.7. CARDIOLOGICAL PSYCHOLOGIST AS PART OF REHABILITATION TEAM

The cardiac rehabilitation team at 1 Military Hospital is a multi-disciplinary team consisting of the following:

- Medical Doctors at the Cardiology Clinic and Rehabilitation Clinic
- Nursing Personnel at the Cardiology Clinic and Rehabilitation Clinic
- Biokineticists at the Cardiology Clinic and Rehabilitation Clinic
- Dieticians at the Dietetics Clinic of 1 Military Hospital
- Psychologists at the Cardiology Clinic and Rehabilitation Clinic and Department of Psychology
- Social Workers
- Physiotherapists (Lake, 2002).

Each of these professions have made significant scientific contributions to advances in Cardiac Rehabilitation (Abbot, 1988). This contribution is maximised through the interdisciplinary nature of the team, and the resulting patient care is

more than would be the case if the professions remained separate. Each of the disciplines in the team can draw from the knowledge base and clinical practice of the other contributing disciplines.

Dr N. Gordon, who was the head of cardiac rehabilitation in1983, observed the need for psychology being part of the rehabilitation team. Capt. A. Versluis started a psychological consultation service for the Department of Cardiology in 1987. Even though the service was started on a part-time and often irregular basis, by July of that same year it became a full-time psychological service point, and has remained as such until the present day (Lake, 2002).

Before the initiation of this service, only cardiology patients with serious psychological and psychiatric problems were referred to psychology or psychiatry. As a substitute, cardiology doctors would simply prescribe antidepressants to alleviate the symptoms of emotional distress associated with cardiac problems.

The task of the psychologist working in the cardiology setting is not primarily focussed on identifying psychopathology, but rather on guiding the patient on the long road of adjustment problems that often accompany heart surgery (Lake, 2002). The psychologist sets out to aid the return of the patient, as well as his family, to a level of autonomy and functionality that minimises the debilitating effects of the heart condition on their lives. The aim is for the patient to acquire potential levels equal to and in some cases even exceeding pre-morbid levels of functioning. According to Abbot (1988), the basic purpose of a psychologist working as part of the cardiology rehabilitation team, is the individual psychological evaluation of patients, as well as the application of psychotherapy as needed. The psychologist is to act as moderator and co-ordinator for patient and spouse education.

The implication of this is that any knowledge concerning the potential psychological impact of the process on the patient and his family allows the psychologist a greater variety of resources at his disposal. Specific to this research, is the role of the psychological constructs Self-Concept and Emotional Profile.

4.7.1. Phases of Intervention

According to Versluis (1987) the psychologist can be a valuable contribution to the team at various phases of the patient's intervention at the hospital, specifically the preparation, operation, hospitalisation, recuperation and active rehabilitation phases.

4.7.1.1. Preparation Phase

The psychologist can use this phase to meet the patient and his family, to make an evaluation of the person and his social circumstances, and to identify possible problem areas. This is a very important part of the process, as it is here that the psychologist makes initial contact with the patient and his family.

The psychologist also becomes a source of information to the patient and his family, and should be well aware of the medical aspects surrounding coronary heart disease. This can give the patient some peace of mind, as he can receive information about his disease and the effects thereof in a non-threatening environment. Emotional reactions, like anxiety, depression, aggression, denial, guilt and unrealistic expectations can be contained by the psychologist, and the patient can be allowed to give free expression to these emotions.

The patient can already at this early stage be made aware of the risk factors associated with coronary heart disease, so as to start empowering the patient to take control of his own life.

4.7.1.2. Operation Phase

Suddenly the patient finds himself in a foreign and threatening environment when he enters the hospital. All aspects of his daily life are disrupted, and he has to prepare himself to be at the mercy of the hospital staff. The patient becomes very dependent on the medical staff at the hospital, and his family is placed in a peripheral and often helpless position. All they can do is wait. They will however be of great value to the patient after the operation, especially if complications occur.

The psychologist at this stage has very much of a supporting role, and should be available for the family while they await the outcome of the surgery. They should be informed of possible future scenarios, and how the surgery and the post-operation recovery period may affect them as a family.

4.7.1.3. Hospitalisation Phase

The patient and his family can often have unrealistic expectations following coronary heart surgery. The patient can feel anxious and depressed, and may not always understand why they are feeling like this. The expected elation at surviving the operation is often overshadowed by the anxiety and depression.

In this stage the family has start re-evaluating their roles in the family context, and this can lead to conflict. The psychologist can aid the family in this task, by facilitating the change process.

4.7.1.4. Recuperation Phase

The recuperation phase refers to the time right after the patient is discharged from the hospital, and the family is confronted with the reality of how their lives have been changed. The realisation is now taken out of the hospital, and into

their home environment. This is a time of slow physical healing, but also of emotional healing. The accepting of a new lifestyle and various changes like eating habits and exercise has to occur. Even thought the patient might want to convert his lifestyle comprehensively from the start, this is not easy, and may lead to frustration for the whole family. The patient is limited by what his body can do, and it can sometimes feel as if the frustrations outweigh the healing. The patient is often a person who spend most of his time at work, and is now very much part of the home environment. The psychologist should normalise this process for the family, and explain to them that things will not change completely overnight. Also of importance is to check that the patient is dealing with the depression and anxiety, and intervene if it becomes pathological.

4.7.1.5. Active Rehabilitation Phase

A big part of the active rehabilitation programme at 1 Military Hospital is the group physical exercise programme. This implies that the patient, after a time deemed fit by the rehabilitation team, will visit the hospital three times per week to take part in a specially developed exercise programme.

This part of the process is very important for the sustained psychological well being of the patient. This gives him the opportunity to have contact with other individuals, who have undergone similar procedures. He can gain insight into how others experience it, and form a sense of camaraderie with them. The psychologist, who takes part in the exercise programme, has the opportunity to observe the patient becoming part of a social environment again.

4.8. CONCLUSION

This chapter aimed to give the reader a brief overview of certain crucial issues relating to cardiology. It has been shown that CHD has a huge financial, social and psychological impact on not only the patients with CHD, but also on their families, friends and the economy of the South Africa at large.

In this chapter, the overview of cardiological aspects has cumulated with a discussion of the role of the cardiological psychologist as part of a multi-disciplinary team. The rehabilitation of cardiological patients has to be approached from many different levels, and it cannot be assumed that the patient's body is the only thing to be affected by the disease. The overview has shown that the psychological aspects of CHD cannot be denied, and has to receive the attention of not only the psychologist, but also all the other members of the multi-disciplinary team.

CHAPTER 5

METHODOLOGY

5.1. INTRODUCTION

In this chapter the research process and design are described. The research design that will be used will be discussed, and attention will be given to the procedure that will be followed during the research project.

5.2. AIM OF THE RESEARCH

The aim of this study is to describe the presented self-concept and emotional profile of a sample of cardiological patients, and indicate to what extent this is an accurate presentation of their psychological make-up. A secondary aim is to disseminate these results back to the sample so as to gain insight into the way in which they interpret the results.

5.3. TYPE OF DESIGN

This research study will be based on quantitative research principles. According to Neuman (2000), the following are earmarks of quantitative research:

- The hypothesis that the researcher begins with is tested
- Concepts are in the form of clear and defined variables
- Measures are systematically created before the data is collected, and are standardised
- Data is represented in numeric form and obtained from precise measurement
- Theory is causal and deductive
- The procedures are standard, and replications are assumed

- Statistics, tables and/or charts are used to show how data relates to hypothesis.

The research is to make use of statistical hypothesis testing; which allows the researcher to draw conclusions about certain characteristics of a population, based on observations obtained from a sample (Pett, 1997). Correlations will be conducted between variables. Correlational studies do not control or manipulate variables, but rather provide a description of the relationship between them (Grim, 1993).

Nonparametric tests are statistical tests that do not require parameter estimations and/or specific distributional assumptions (Howell, 1995). By using this type of statistical inquiry, the need for very restrictive assumptions is greatly reduced. According to Pett (1997), non-parametric testing is valuable in Health Care research, due to the acceptance of small sample sizes and unusual or irregular sampling distributions. This author states that this type of test deserves greater recognition and use in psychology.

5.4. THE SAMPLE

The sample that the research is based on will be drawn from individuals who have been diagnosed as suffering from CHD, and who have been subjected to some kind of surgical intervention as a result thereof.

The subjects are all part of ‘The Heart Club’, an informal social club formed by patients exercising at 1 Military Hospital. Participation will be based on individuals volunteering after an information giving session; therefore based on informed consent. An example of the informed consent form is included as Appendix A.

In other words, inclusion in the study will be based on voluntary terms, and the only requirement will be that the participants must be suffering from some form of coronary heart disease and have had been subject to surgical intervention as a result thereof. No distinction will be made based on other demographical data, such as culture, gender, etc.

5.5. BIOGRAPHICAL DATA

The following biographical information will be obtained from each participant:

- Gender
- Age
- Marital Status
- Nature of Cardiological Procedure
- Years since initial Cardiological Procedure.

The results obtained from this information will be discussed in detail in the next chapter.

5.6. THE INSTRUMENTS USED

5.6.1. The Adolescent Self-Concept Scale (ASCS)

5.6.1.1. Background

The Adolescent Self-Concept Scale (ASCS) is based on a multidimensional self-conceptual perspective. This allow for different facets of the global self-concept to be interpreted as separate constructs even though they remain intercorrelated (Byrne, 1996). Using this perspective, a measurement instrument can yield specific information relating to how different individuals might give more weight to different aspects of self-concept. A student's self-concept might have a stronger

academic influence, where a fashion conscious model might have a stronger physical self-concept influence, even though they might have a similar global self-concept.

The purpose of the ASCS is to enable understanding into how self-concept is manifested in individual people (Vrey, n.d.). It is based on the Tennessee Self-Concept Scale, which is one of the most widely used self-concept measures (Byrne, 1996).

The Tennessee Self-Concept Scale, and by implication the ASCS, is based on a Taxonomic understanding of self-concept. The Taxonomic understanding of self-concept is derived from J. P. Guilford's model of intelligence (Byrne, 1996). According to this model of intelligence, different components of intellect reflect the intersection of two or more facets, each of which will have at least two levels. Inherent to this structure is the implication that there is a correlated and hierarchical order amongst the factors underlying the model (Marsh & Hattie, 1996).

To apply this to the ASCS, it can be seen that the ASCS reflects a taxonomic structure with three facets. The first facet is reflected by the distinction made between personal, values, family, social and physical self-concepts. All of these can then be manifested in relation with the second facet, which distinguishes between identify, acceptance and behaviour. The third facet relates to the wording of the test items, which provides a mechanism for controlling certain response biases. According to Byrne (1996), the Taxonomic Model has proven an effective way of combining structural as well as process components related to self-concept.

According to Vrey (n.d.) knowledge relating to an individual's self-concept is beneficial as it yields a good indication of that person's psychological make-up. In order to understand a mature person, regardless of whether he is 'normal' or

'pathological', insight into how he views himself will always be a great help in understanding the person. The ASCS was designed and standardised to help mental heath professionals to perform this function.

5.6.1.2. Dimensions of Self-Concept

The measurement instrument divides the global self-concept into six dimensions. Each of these dimensions will be discussed in relation to what a person should identify with, how the individual accepts it, and how it influences his behaviour (Vrey, n.d.).

5.6.1.2.1. Dimension I – Physical Self

An individual who has a high physical self-concept will identify with someone who is in good health, is well dressed and tidy, who is unaware of pain and seldom feels under the weather.

Acceptance of an individual's physical dimensions like weight and height, as well as acceptance of his overall appearance, bodily parts, general health and attractiveness to members of the opposite gender will indicate a positive physical self-concept.

A positive physical self-concept is indicated by behaviour such as grooming, strenuous manual labour, enjoyment when acting in front of others, as well as enthusiasm in the execution of daily tasks. A positive self-concept is further signified by actions that are not marred by negative emotions like worry, uncertainty and clumsiness. These negative emotions would indicate that an individual views himself as unworthy and incompetent, and so has a negative physical self-concept.

5.6.1.2.2. Dimension II – Personal Self

The individual who perceives himself to be adequate in terms of his personal self-concept is cheerful, calm and collected and views himself as being equal to other people. He identifies with someone who does not loose self-control or feels inferior to others.

This person will identify with someone who has a high regard for himself and who is satisfied with his person. He is also satisfied with his level of friendliness towards the people around him as well as with his problem-solving abilities.

An individual who identifies with this will act in a way that keeps this self-concept intact. This implies behaviour that reflects insight into the consequences of the behaviour. He is content with his achievements, is sure of his convictions, and can quickly reach a decision. He will not get angry when other people make him aware of a personal error or mistake.

5.6.1.2.3. Dimension III – Family Self

A person with a positive family self-concept will have relationships with his family members that are indicative of the fact that he is accepted. He is certain of his family's love, is happy within that environment, and is respected by family members in such a way that they trust him and can approach him for advice. Due to this, he can be convinced that his family will support him in any situation.

A person's self-concept is easily manifested within the family environment, and a person with a positive self-concept will have a feeling of pride relating to his family. This family will have few disagreements, and they will want to make time to spend together. He is not suspicious of what his family is saying behind his back, and is not easily hurt by what they do say about him. He accepts the

relationships in the family and is content with the love that is part of the family structure.

The relationship between people in a family environment often influences their underlying behaviour. Healthy relationships will sprout out of a positive family self-concept, and will be reflected in the person's behaviour. He is fair and just, and will not act in a way that will compromise any members of the family. He will readily go and visit others, and treats his parents with respect and love. This individual feels that his family accepts him, without the need for criticism.

5.6.1.2.4. Dimension IV – Social Self

The self-concept that has its origin within the family will also then become a broader concept, as the person moves into social communities. A person who has a positive social self-concept is friendly towards others and popular amongst people of the same and opposite gender. He finds that people wants to spend time with him, and that he can easily make friends. He is interested in the lives of other people, and takes the time to get to know others better.

An acceptance of a positive self-concept manifest in a cordial and congenial identity when in the presence of others. This person is popular and willing to help, and is seldom reserved and self-conscious. Just as he is interested in other people, so he is also happy with other people's interest in him.

Behaviour that is associated with a positive social self-concept includes being able to easily make new friends, to be able to get along with others, and to be able to engage in social conversation. He easily forgives others and sees their good characteristics.

5.6.1.2.5. Dimension V – Value Self

A person with a positive value self-concept identifies with moral and religious values. He is honest and respects the needs of other people.

The acceptance of a positive value self-concept brings contentment that values like honesty, goodness, trustworthiness and trust are part of the person's daily life. He easily takes responsibility for other people in need.

Because of a positive value self-concept, this person will be able to act in a way that reflects this. He will have a foundation to base his behaviour on so that he need not be concerned about what other people expect of him. Because he is convinced about what is wrong and what is right, he is willing to change his own behaviour when he feels that it is wrong. He will also point this out to other people when he feels that they are acting in a way that is contrary to what is right.

5.6.1.2.6. Dimension VI – Self-criticism

The measurement instrument also includes a dimension of self-criticism. This dimension includes certain statements that place the person in a negative light, but it reflects behaviour that most people have at some time in their lives been guilty of. These statements were taken from the L Scale of the MMPI (Burns, 1979). When a person indeed has a positive self-concept, he will have no problem in admitting to these behaviours. Some of these aspects include getting mad, being irritated, gossiping, having bad thoughts, getting frustrated, just wanting to win, procrastinating work, not liking all people, and committing some crime, like skipping a stop street.

The assumption behind these items is that a person with a positive self-concept should be able to evaluate himself critically, and be honest about not being

perfect (Burns, 1979). A high score would indicate a healthy openness as well as a capacity for self-criticism; whereas a low score implies that the other scales are artificially high, and that the person was excessively defensive.

5.6.1.3. Reliability and Validity

The reliability of the ASCS and its subscales were indicated by using the Kuder-Richardson formula (Vrey, n.d.). The metrical characteristics of the ASCS are indicated in table 5.1 below.

	Max. Score	Average	Stand Dev.	Reliab. K-R20
Global	92	70.7	10.5	.85
Subtest A	18	12.6	2.7	.62
Subtest B	18	12.6	3.1	.70
Subtest C	18	14.4	2.9	.74
Subtest D	18	12.7	3.6	.78
Subtest E	18	12.3	2.9	.67
Subtest F	10	6.1	2.1	.56

Table 5.1: Metric characteristics of the ASCS

The construct validity of the ASCS was indicated by measuring the way in which each test item measures the same construct as the test total (Vrey, n.d.). All of these correlations were found to be highly significant, as R = 0.172 on the 0.01 level, and 0.148 on a 0.05 level.

The ASCS was primarily developed with the adolescent in mind (as the name of the instrument implies), but has also been standardised for use with a variety of other norm groups, including adult individuals. With the age of the sample group in mind, the researcher will make use of norms that where developed for a more mature sample. The norms that Vrey (n.d.) has developed for a university population will be used for this research study.

5.6.2. The Emotions Profile Index (EPI)

5.6.2.1. Background

The Emotions Profile Index (EPI) is a personality test that is based on the underlying principles of the psychoevolutionary theory of emotions. It indicates the relative importance of eight basic emotional dimensions on an individual's life, and how the individual's personality is generated through a blend of these basic emotions. It is then essentially designed to yield information concerning an individual's basic personality traits and underlying personality conflicts (Plutchik & Kellerman, 1974). Referring to a few basic categories can identify a wide variety of personality traits. These traits and conflicts can be represented on a circumplex model, to make it easy for the examiner to make inferences based on the data supplied.

The afore-mentioned principles of similarity and polarity are of critical importance to the working of the EPI (Plutchik, 1997). The emotional circle of the EPI shows the eight basic emotions arranged according to their level of similarity and degree of polarity. The implication of this is that emotions that are more likely to be in conflict will be on opposite sides of the circle, and emotions that tend to be less in conflict can be found grouped closer together. In this way a mix of polar opposite emotions are associated with the most conflict.

The EPI has been used in a variety of contexts, including:

- Clinics
- Mental hospitals
- Vocational guidance centers
- Counselling and psychotherapy
- Diagnostic evaluations
- Research purposes (Plutchik & Kellerman, 1974).

The eight basic traits of the EPI are derived from 12 trait terms, which are paired in all possible permutations, through a 62-item forced choice questionnaire. The testee is asked to indicate his preference for one of two trait terms with each of the 62 test-items.

The trait terms that are used to infer the eight basic dimensions are listed in table 5.2 below (Plutchik & Kellerman, 1974).

Trait Term	**Description**
Adventurous	Someone who often tries new activities for excitement.
Affectionate	Someone who often shows his warmth and love for others.
Brooding	Someone who silently stews with anger and keeps it to himself.
Cautious	Someone who is usually careful because he is afraid of what might happen to him.
Gloomy	Someone who mopes around and feels in a sad and dark kind of mood.
Impulsive	Someone who usually acts on the spur of the moment because of an urge, without thinking of the consequences.
Obedient	Someone who will usually do what he is told, without objecting.
Quarrelsome	Someone who often starts arguments.
Resentful	Someone who walks around with a “chip on his shoulder” and is easily made angry.
Self-conscious	Someone who usually worries about other people’s opinion of him when he is with them.
Shy	Someone who usually feels timid with other people and in new situations.
Sociable	Someone who is friendly and who usually likes to be with other people.

Table 5.2: Trait terms

A person taking this test is asked to indicate which one of two descriptive words is more applicable to himself. An example of this is whether he is more *shy* or more *gloomy.* The questionnaire is scored in terms of the implied emotions of the selected trait item. In the example used here, shyness would imply fear and expectation, and gloominess would imply sadness and anger (Plutchik & Kellerman, 1974). The component emotions of each of the trait terms can be indicated as reflected in table 5.3 (Plutchik & Kellerman, 1974). Each test contributes to one or more of the basic traits that can then be presented on an emotional circle, with separate scores for each of the basic dimensions.

Trait	**Emotion 1st Component**	**Emotion 2nd Component**
Sociable	Acceptance	Joy
Affectionate	Acceptance	Joy
Adventurous	Surprise	Expectation
Resentful	Anger	Disgust
Impulsive	Surprise	Anger
Quarrelsome	Anger	Disgust
Brooding	Anger	Sadness
Shy	Fear	Expectation
Gloomy	Sadness	Anger
Cautious	Expectation	Fear
Self-conscious	Expectation	Disgust
Obedient	Acceptance	Fear

Table 5.3: Component emotions of trait terms

Based on this, the basic bipolar emotional dimensions that are measured by the EPI can be described using the terms listed in table 5.4 below (Plutchik & Kellerman, 1974).

Timid	Versus	Aggressive
Trustful	Versus	Distrustful
Controlled	Versus	Dyscontrolled
Gregarious	Versus	Depressed

Table 5.4: Basic bipolar dimensions

These terms will be discussed in detail in the next section, in terms of how they can be indicated using a circumflex model, as well as how they can be defined in such a way as to allow the researcher to describe the emotional profile of the relevant sample group.

5.6.2.2. Interpretation of the Emotion Circle

The emotional circle can, at a glance, indicate the relative strengths of each of the basic emotions, as well as how they interact with each other (Plutchik & Kellerman, 1974). As can be seen in figure 5.1, the bipolar opposite terms are placed opposite each other, indicating that they refer to contrasting emotions. Similar emotions are placed closer together, and the closer together they are, the more the underlying constructs are similar. The circle can further be interpreted by looking at what kind of a person is implied by either a high or a low score on each of the eight dimensions.

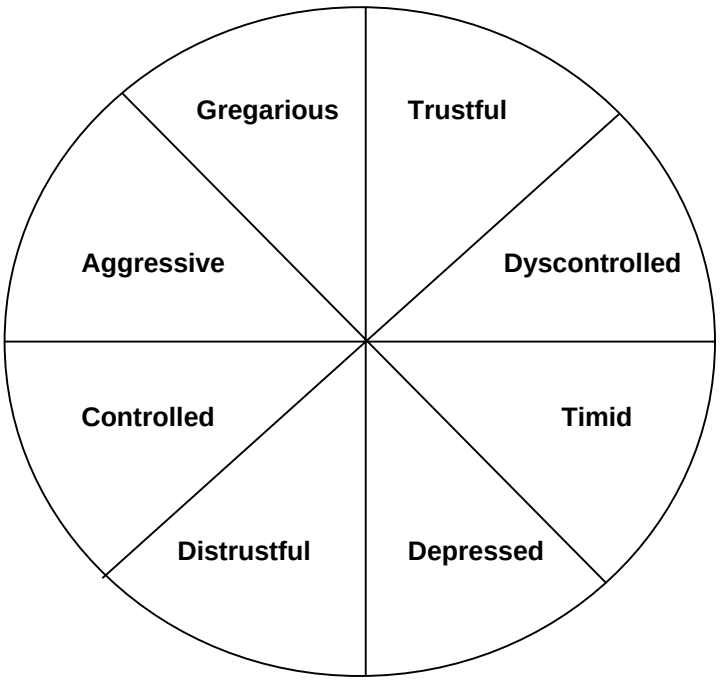

Fig 5.1: Emotional circle

5.6.2.2.1. Gregarious Dimension

A high score on this dimension would be indicative of a person who is sociable, friendly, affectionate and fairly extroverted. This person enjoys being in the company of others, and having affectionate relationships.

A person with a low score would tend more towards being unsociable, unfriendly, unaffectionate and introverted. This person is isolated from others, and withdraws himself from company.

5.6.2.2.2. Trustful Dimension

A person who has a high score on the Trustful dimension will gravitate towards being accepting, trustful, obedient and gullible. This is a person who chooses not to complicate things, who is often dependent and suggestible.

A low score indicates an unaccepting, distrustful, disobedient and far from gullible person who does not take things at face value.

5.6.2.2.3. Dyscontrolled Dimension

A high score on this dimension indicates an impulsive person, who likes to have novel experiences and be exposed to innovative ideas. This person might be said to be adventurous and inquisitive, and like surprises.

A low score, on the other hand, would designate an unadventurous person, who is indisposed to try new things and have novel experiences. He is not a person who enjoys social contacts, and does not tend to be spontaneous.

5.6.2.2.4. Timid Dimension

A high score would indicate a cautious, careful and apprehensive person. This is a person who worries about getting into trouble, and is always fretful about what others might think or say about him.

A person with a low score on this dimension would probably be less cautious and anxious than the average person. It is a person who can easily take risks, and can just as easily get into trouble. It may even extend as far as him doing things that are clearly dangerous and not in his best interest.

5.6.2.2.5. Depressed Dimension

A high score is indicative of a sad, depressed and miserable person, who is dissatisfied with some aspects of his life. He is pessimistic about life in general, and often feels deprived. An extremely high score may be suggestive of suicidal tendencies.

The lower the score, the more this person tends to be satisfied with his way of life, although an extremely low score might be indicative of strong denial tendencies.

5.6.2.2.6. Distrustful Dimension

A high score indicates a person who is stubborn, resentful and sarcastic. He tends to reject the ideas of others, and is often excessively critical. Other people perceive him as being hostile, guarded or passive-aggressive.

A low score on this dimension indicates a person who tends to be uncritical and not rejecting.

5.6.2.2.7. Control Dimension

A person with a high score tends to want to know about the environment he is in, and how to deal with it. This is a controlled person, with a need for order. He tends towards being self-controlled, and is perceived by others as being compulsive and meticulous.

A low score, alternatively, refers to a person who lives his life from day-to-day, and rarely plans for the future. He tends towards being disorganised in thinking and behaviour, and does not identify with being orderly.

5.6.2.2.8. Aggressive Dimension

A high score would indicate a quarrelsome and aggressive person, who says whatever is on his mind. His anger is expressed overtly, and often others have to bear the brunt of his outbursts. He can be described as being rebellious.

A low score is indicative of a docile person, who is not quarrelsome. This is a passive person, who does not overtly express the little aggression that he does have.

5.6.2.2.9. Bias Dimension

A high score on the Bias Scale indicates an inclination to pick the more socially desirable of the two paired items.

A low score refers to the opposite. It refers to a tendency of the individual to pick the more socially undesirable of the two items, and in this way depict himself as socially undesirable.

5.6.2.3. Reliability and Validity

The reliability of the EPI was initially estimated when it was administered to 40 female patients in a mental institution, as well as to 20 matched control subjects (Plutchik & Kellerman, 1974). Test-retest reliability was determined three days later on the same subjects. It was found that the product-moment correlations for all of the different scales were over + 0.90.

The split half reliability of the EPI was based on a random sample of 50 test scores obtained from the test records of a group of 200 college freshmen (Plutchik & Kellerman, 1974). The split half reliabilities of the different dimensions are reflected in table 5.5 below.

Timid	+ .80
Dyscontrolled	+ .75
Trustful	+ .89
Depressed	+ .71
Aggressive	+ .77
Controlled	+ .78
Distrustful	+ .61
Gregarious	+ .90
Bias	+ .85

Table 5.5: Split half reliabilities of EPI dimensions

The validity of the EPI was assessed by comparing the EPI scales with scales of other tests, including the Minnesota Multiphasic Personality Inventory (MMPI) and the Edwards Personal Preference Schedule (EPPS) (Plutchik & Kellerman, 1974).

Another method of assessing the validity of the EPI that was used was to demonstrate whether the EPI had the potential to discriminate between special populations, or special conditions. This was indicated in numerous studies, which add to the overall validity of the EPI.

5.7. THE PROCEDURE

The researcher will approach members of an informal exercise group, called the 'Heart Club', and ask for participants. As the Department of Psychology at 1 Military Hospital supports this group, relevant permission will be obtained. The researcher will explain to the group what the research entails, and what is implied by participation. Volunteers will be asked to sign an informed consent form, to ensure that the study is continually based on ethical principles. The participants will be required to complete a questionnaire, containing the EPI and the ASCS, in

their own time at home. They will be asked to return the completed questionnaires to the researcher when they had completed them.

Upon return of an adequate number of questionnaires, the researcher will score the raw data, and use statistical methods to interpret the results. After this phase of the project, the original participants will be invited to attend an information and discussion session. During this session the researcher plans to give feedback to the group and also learn more about their views and interpretation of the research findings.

5.8. DATA ANALYSIS

To provide descriptive information on the population demographics, as well as their scores on the ASCS and EPI, frequency tables and histograms will be used. According to Howell (1995), a frequency distribution is where the values of the dependent variables are plotted against the frequency of their occurrence. This allows the researcher to organise raw data into some sort of logical order. A histogram can be defined as a graph where rectangles are used to represent the frequency of an observation in a visual format. This obscures random 'noise' in the raw data, and allows the researcher to identify important trends.

The Spearman Rank-Order Correlation Coefficient will be used to indicate whether or not a statistically significant relationship exists between the subscales of the measurement instruments, and the bias/self-criticism scales of the same instrument. The reason for this is to indicate to what extent, if any, the sample tends towards presenting themselves in a positive light on the various subscales, while the bias/self-criticism scales indicate that they are faking good, or portraying themselves more positive than they might in reality be experiencing.

The Spearman is one of the best known and frequently used non-parametric statistics in health care work (Pett, 1997). This test is used to examine the

relationship between two ordinal-level variables, and is a suitable equivalent to it's parametric alternative, the Pearson product-moment correlation coefficient. The Spearman can be used if two critical assumptions are met, Firstly it must be indicated that the two selected variables, X and Y, are continuous variables with a minimum ordinal level of measurement. Secondly, the two variables must be paired observations.

The Spearman Rank-Order Correlation Coefficient will then be used to indicate the strength of the following relationships:

Self-Concept:

H_0 – There is no significant correlation between the **physical** self and the self-criticism scales on the self-concept scale
H_1 – There is a significantly *positive* correlation between the **physical** self and the self-criticism scales on the self-concept scale

H_0 – There is no significant correlation between the **personal** self and the self-criticism scales on the self-concept scale
H_1 – There is a significantly *positive* correlation between the **personal** self and the self-criticism scales on the self-concept scale

H_0 - There is no significant correlation between the **family** self and the self-criticism scales on the self-concept scale
H_1 - There is a significantly *positive* correlation between the **family** self and the self-criticism scales on the self-concept scale

H_0 - There is no significant correlation between the **social** self and the self-criticism scales on the self-concept scale
H_1 - There is a significantly *positive* correlation between the **social** self and the self-criticism scales on the self-concept scale

H_0 - There is no significant correlation between the **value** self and the self-criticism scales on the self-concept scale
H_1 - There is a significantly *positive* correlation between the **value** self and the self-criticism scales on the self-concept scale

Emotion:

H_0 – There is no significant correlation between the **gregarious** dimension and the bias dimension on the Emotions Profile Index
H_1 – There is a significantly *positive* correlation between the **gregarious** dimension and the bias dimension on the Emotions Profile Index

H_0 – There is no significant correlation between the **trustful** dimension and the bias dimension on the Emotions Profile Index
H_1 - There is a significantly *positive* correlation between the **trustful** dimension and the bias dimension on the Emotions Profile Index

H_0 - There is no significant correlation between the **dyscontrolled** dimension and the bias dimension on the Emotions Profile Index
H_1 - There is a significantly *negative* correlation between the **dyscontrolled** dimension and the bias dimension on the Emotions Profile Index

H_0 - There is no significant correlation between the **timid** dimension and the bias dimension on the Emotions Profile Index
H_1 - There is a significantly *positive* correlation between the **timid** dimension and the bias dimension on the Emotions Profile Index

H_0 - There is no significant correlation between the **depressed** dimension and the bias dimension on the Emotions Profile Index

H_1 - There is a significantly *negative* correlation between the **depressed** dimension and the bias dimension on the Emotions Profile Index

H_0 - There is no significant correlation between the **distrustful** dimension and the bias dimension on the Emotions Profile Index
H_1 - There is a significantly *negative* correlation between the **distrustful** dimension and the bias dimension on the Emotions Profile Index

H_0 - There is no significant correlation between the **control** dimension and the bias dimension on the Emotions Profile Index
H_1 - There is a significantly *positive* correlation between the **control** dimension and the bias dimension on the Emotions Profile Index

H_0 - There is no significant correlation between the **aggressive** dimension and the bias dimension on the Emotions Profile Index
H_1 - There is a significantly *negative* correlation between the **aggressive** dimension and the bias dimension on the Emotions Profile Index

5.9. DISCUSSION GROUP

To ensure that the sample group remain informed regarding the research, and allow the researcher the opportunity to gain insight into their understanding of the yielded research results, the researcher plans to hold a group discussion with the participants. The researcher will approach the sample group and ask for individuals who would like to participate in this discussion group. Once again this will be done on a voluntary basis, and relevant ethical considerations will be kept in mind. These individuals can then disseminate the information further to the rest of the original sample group.

5.10. ETHICAL ASPECTS

To ensure that this research study conforms to the ethical standard set by the Department of Humanities at the University of Pretoria the researcher will take care to adhere to the strictest ethical principles possible. The following are some of the main ethical aspects that the researcher will apply in the research study.

This study will not make use of any form of intervention, and will be purely focussed on the gathering of information. Therefore the researcher is confident that it is possible to complete the study without contradicting any the ethical standard set.

To ensure full confidentiality and to promote participation, the questionnaire will at no point require the participant to divulge any identifying information. Consent can be given by simply signing a consent form. Any other biographical information on the questionnaire will only be used to refer to the sample as a whole, and no reference will be made to any individual information. Therefore the participants can be assured that the identities and privacy of the volunteers will be respected under all circumstances.

Both the Adolescent Self-Concept Inventory and the Emotional Profile Index are psychometric instruments that have been standardised for use in the South African context as well as the sample group in question, and the reliability and validity of both the instruments has been the subject of previous research.

The research process will be transparent, and open to scrutiny by the participants at all times. The research will not make use of any form of deception. The researcher will make his contact details freely available, so that the participants can contact him at any time, should any queries or uncertainties arise. A discussion group to be held after the completion of the data analysis will also allow the participants to give feedback on how they experienced their

participation. The participants will, at this meeting, be allowed to express their further needs, which the researcher will address as far as possible.

As far as the researcher can foresee, this proposed research study has no implicated disadvantages for any of the parties represented. All care will be taken to handle all aspects of the research in a highly ethical and responsible manner, as to ensure the attainment of valuable and pragmatic research data.

5.11. CONCLUSION

This chapter has outlined the structure that will govern the process of this study. The researcher can follow this procedure which allows for the attainment of data in a structured and ordered manner. In the same way the data can then be subjected to scrutiny to yield viable results. These results, as well as an in-depth discussion of them, will be the focus of Chapter 6.

CHAPTER 6

RESULTS AND DISCUSSION

6.1. INTRODUCTION

This chapter provides the statistical results obtained from the data collected from the questionnaires as well as a discussion of the results. First the descriptive demographical data will be presented through frequency tables and histograms. This will be followed by results obtained from the ASCS and EPI in the same manner. Lastly the chapter will provide correlative data pertaining to the self-criticism and bias scales on the separate measurement instruments.

Throughout the chapter the views and interpretation of the sample group as obtained during the feedback and discussion session will be indicated where applicable. The researcher asked the sample group for volunteers to participate in the discussion group. Five individuals indicated that they would like to be part of this process. The discussion group met, with the researcher, to discuss the results and give their input. The discussion group met for one session of about 2 hours long during which various aspects of the research were discussed. The session was structured informally, as to allow participants to express their own views on the subject matter. The only structure that was introduced by the researcher was a short verbal summary of the research findings, which the group was asked to respond to. The resulting conversation was recorded on an audio cassette, and later examined by the researcher, who extracted the relevant themes. The comments of the sample group have been summarised, and will be discussed throughout this chapter at the relevant results.

6.2. BIOGRAPHICAL INFORMATION

6.2.1. Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	27	93.1	93.1	93.1
	FEMALE	2	6.9	6.9	100.0
	Total	29	100.0	100.0	

Table 6.1: Gender

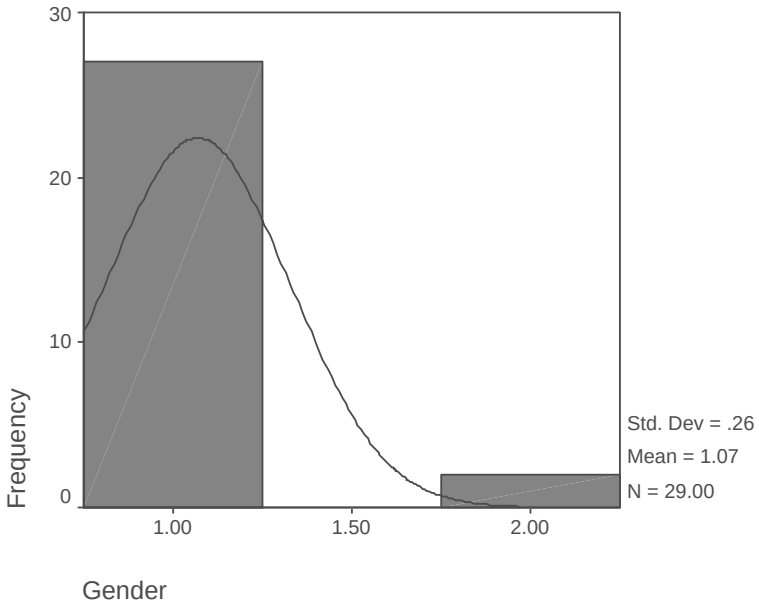

Figure 6. 1: Gender

The participants in the research study where predominantly male, with males making up 93,1% of the total sample. The female participants consisted of only 6.9% of the total sample size. This is consistent with the population from which the sample was taken, as males are generally more likely to suffer from CHD than females (Heart Foundation of South Africa, 2003).

6.2.2. Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	43.00	1	3.4	3.4	3.4
	48.00	1	3.4	3.4	6.9
	49.00	1	3.4	3.4	10.3
	51.00	1	3.4	3.4	13.8
	53.00	1	3.4	3.4	17.2
	54.00	1	3.4	3.4	20.7
	55.00	1	3.4	3.4	24.1
	56.00	1	3.4	3.4	27.6
	57.00	1	3.4	3.4	31.0
	59.00	1	3.4	3.4	34.5
	60.00	4	13.8	13.8	48.3
	61.00	1	3.4	3.4	51.7
	63.00	2	6.9	6.9	58.6
	64.00	2	6.9	6.9	65.5
	66.00	1	3.4	3.4	69.0
	67.00	2	6.9	6.9	75.9
	69.00	2	6.9	6.9	82.8
	70.00	2	6.9	6.9	89.7
	76.00	1	3.4	3.4	93.1
	77.00	1	3.4	3.4	96.6
	84.00	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

Table 6.2: Age

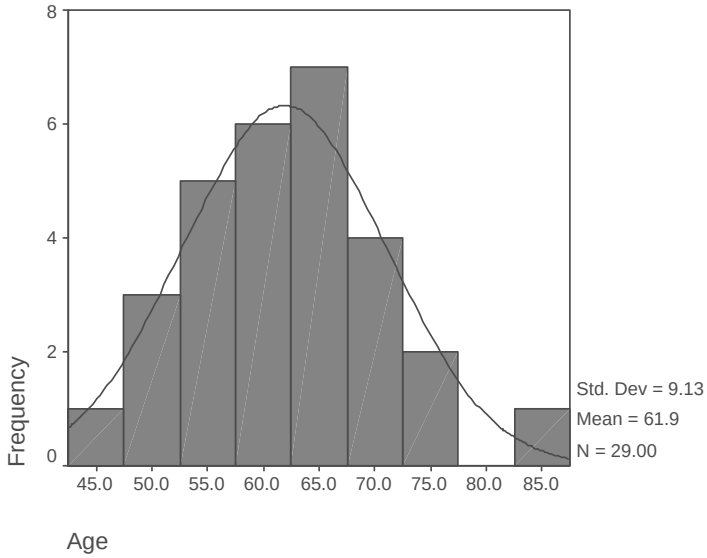

Figure 6. 2: Age

The youngest participant was 43 years of age, and the oldest was 84. This implies that the research study tapped into wide age differential, as there was an age difference between the youngest and oldest participants of 41 years. The mean age of the sample was 61,9 years of age.

6.2.3. Marital Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MARRIED	26	89.7	89.7	89.7
	WIDOWED	3	10.3	10.3	100.0
	Total	29	100.0	100.0	

Table 6.3: Marital status

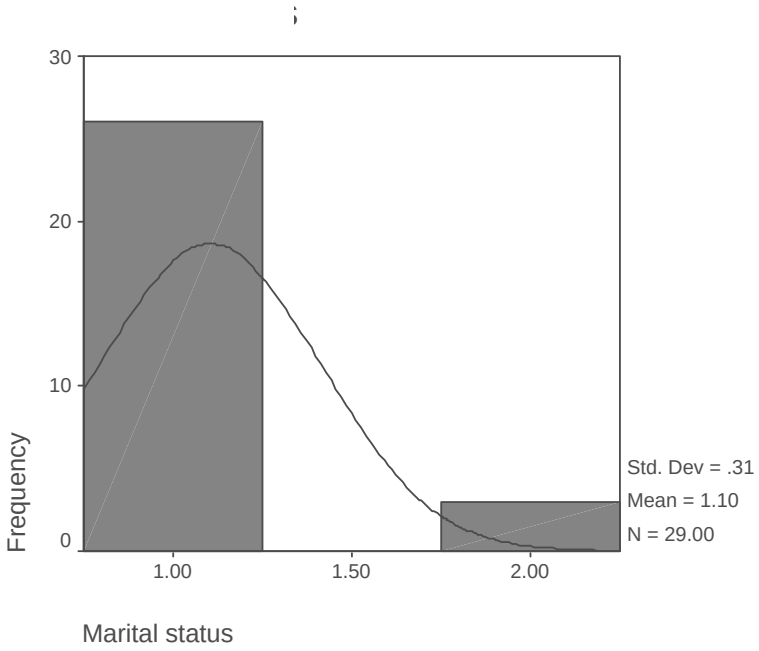

Figure 6. 3: Marital status

As many as 89.7% of the sample indicated that they where married at the time of the research project. The rest of the sample, 10,3%, indicated that they had lost a marital partner some time in the past.

6.2.4. Years Since Operation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	6.9	7.1	7.1
	1.00	5	17.2	17.9	25.0
	2.00	2	6.9	7.1	32.1
	4.00	2	6.9	7.1	39.3
	5.00	1	3.4	3.6	42.9
	6.00	2	6.9	7.1	50.0
	7.00	3	10.3	10.7	60.7
	8.00	2	6.9	7.1	67.9
	10.00	1	3.4	3.6	71.4
	11.00	1	3.4	3.6	75.0
	12.00	1	3.4	3.6	78.6
	16.00	2	6.9	7.1	85.7
	17.00	1	3.4	3.6	89.3
	18.00	2	6.9	7.1	96.4
	22.00	1	3.4	3.6	100.0
	Total	28	96.6	100.0	
Missing	**System**	1	3.4		
Total		29	100.0		

Table 6.4: Years since operation

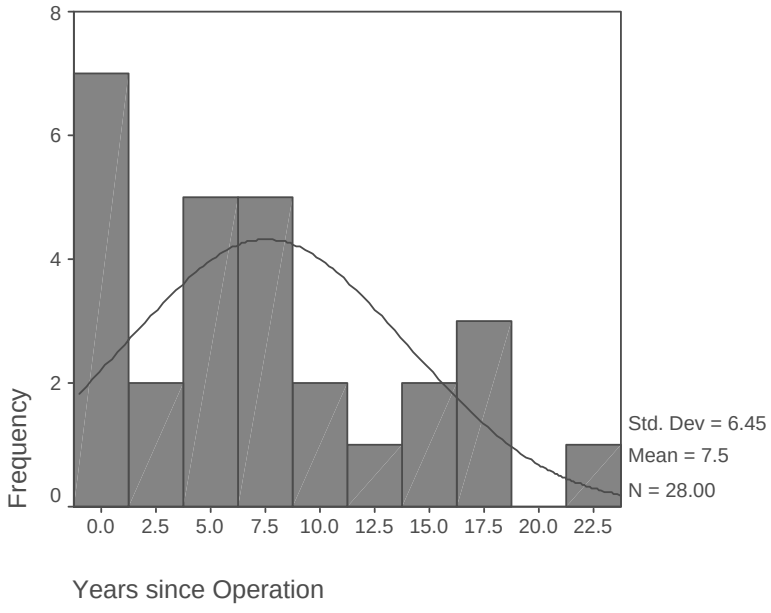

Figure 6. 4: Years since operation

Some of the participants were subjected to surgical intervention as a result of CHD as long ago as 1981, and some as recently as 2003. This implies a time-span of 22 years. The greatest frequency, however, was operated for the first time within the last two years. On average the sample received surgical intervention 7,5 years ago. As can be seen from the table, one of the participants did not indicate how long it has been since his operation. This is why only 28 responses are indicated.

6.2.5. Summary

As can be gathered from the biographical information, the sample that was used for the research study is very diverse in terms of chronological variables. The participants hail from different life-stages, and different backgrounds. Some of the individuals have only recently been introduced to the implications of CHD, while others have been living with it for more than two decades.

6.3. DESCRIPTION OF SCORES ON ASCS

6.3.1. Physical Self-Concept

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	8.00	2	6.9	6.9	6.9
	10.00	3	10.3	10.3	17.2
	11.00	2	6.9	6.9	24.1
	12.00	2	6.9	6.9	31.0
	13.00	4	13.8	13.8	44.8
	14.00	6	20.7	20.7	65.5
	15.00	3	10.3	10.3	75.9
	16.00	2	6.9	6.9	82.8
	17.00	2	6.9	6.9	89.7
	18.00	3	10.3	10.3	100.0
	Total	29	100.0	100.0	

Table 6.5: Physical self-concept

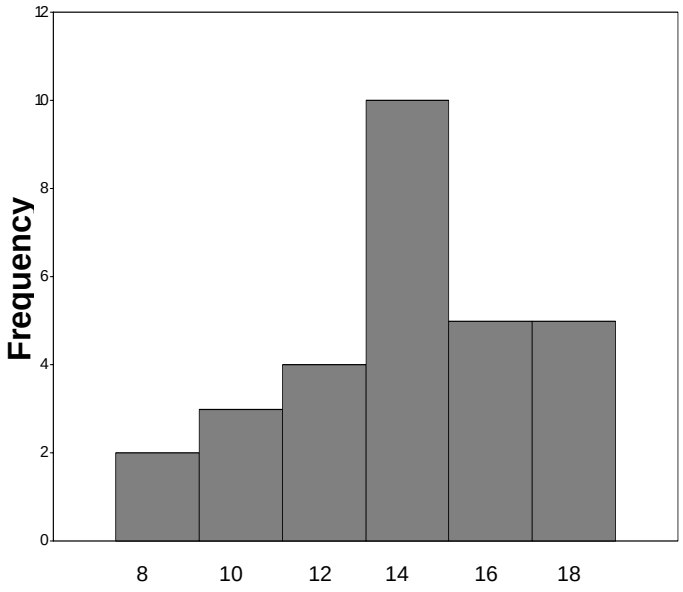

Figure 6.5: Physical self-concept

The sample group identified with the subscale of Physical Self-Concept, as was indicated by an average score of 14 out of a possible 18. Interestingly enough, this implies that the sample group identifies with a person who is of good health and accepting of his overall appearance and is unaware of any bodily pain. A person would instinctively expect this sample group to rather identify with a person who is not in good health, and who is experiencing bodily pain. This phenomenon will be discussed in more detail under the next section, when these scores are correlated with the Self-Critique subscale. Furthermore, the sample identifies with a person who is taken to behaviour such as grooming and vigorous manual labour. A very high work ethic and enthusiasm in the performing of daily tasks is associated with this person.

The discussion group, when asked how they understand this, explained it in terms of how important it is to view themselves as being in good health. One member said that he does not want to '…keep myself invalid mentally', referring

to how he keeps telling himself that he can have a good and healthy life-style. The group also agreed that since they are all members of an exercise programme they could set measurable goals, to achieve a sense of physical well being, even though they have a chronic and often debilitating disease.

6.3.2. Personal Self-Concept

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	1	3.4	3.4	3.4
	7.00	1	3.4	3.4	6.9
	9.00	1	3.4	3.4	10.3
	11.00	2	6.9	6.9	17.2
	12.00	2	6.9	6.9	24.1
	13.00	2	6.9	6.9	31.0
	14.00	4	13.8	13.8	44.8
	15.00	5	17.2	17.2	62.1
	16.00	5	17.2	17.2	79.3
	17.00	5	17.2	17.2	96.6
	18.00	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

Table 6.6: Personal self-concept

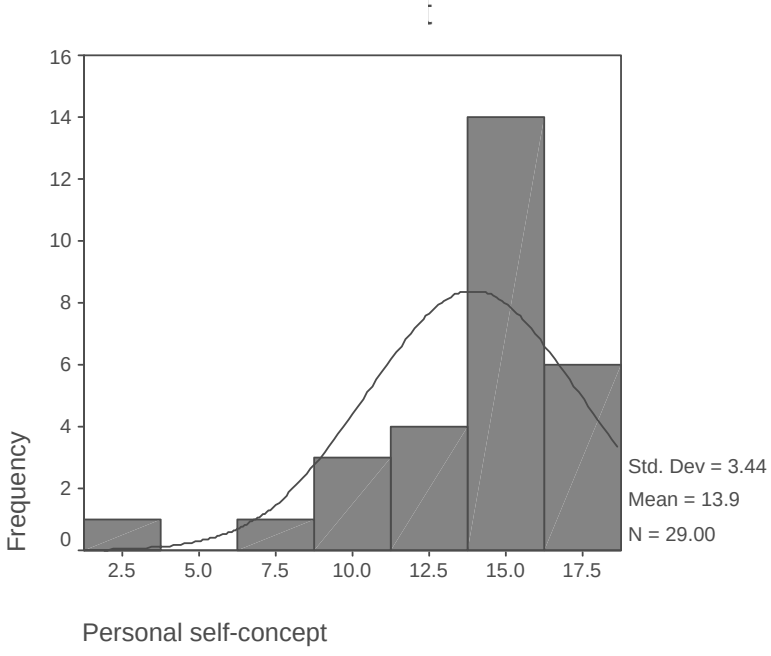

Figure 6.6: Personal self-concept

The sample also identified strongly with the subscale of Personal Self-Concept, with an average score of 14 out of a possible 18. This would indicate that the sample identifies with an individual who is light-hearted, quiet and collected and who view himself as being on the same level as others. He does not like to lose self-control or to feel inferior. A person who perceives himself as having a high personal self-concept is satisfied with his manner towards others. Behaviourally, it would be important for such a person to keep a high personal self-concept intact. He does this by feeling confident about past achievements and being decisive when the situation calls for it.

The importance of showing others that you are okay with who you are was an important point raised by the discussion group. Being part of the Military system, the group could relate strongly to feeling confident about past achievements, and having a feeling of having deserved the care they are getting from the hospital. They have all grown a sense of self through long years of hard work and service, and feel it justified that the Military should spend resources on them now.

6.3.3. Family Self-Concept

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	8.00	1	3.4	3.4	3.4
	10.00	1	3.4	3.4	6.9
	11.00	1	3.4	3.4	10.3
	13.00	2	6.9	6.9	17.2
	14.00	4	13.8	13.8	31.0
	15.00	3	10.3	10.3	41.4
	16.00	5	17.2	17.2	58.6
	17.00	6	20.7	20.7	79.3
	18.00	6	20.7	20.7	100.0
	Total	29	100.0	100.0	

Table 6.7: Family self-concept

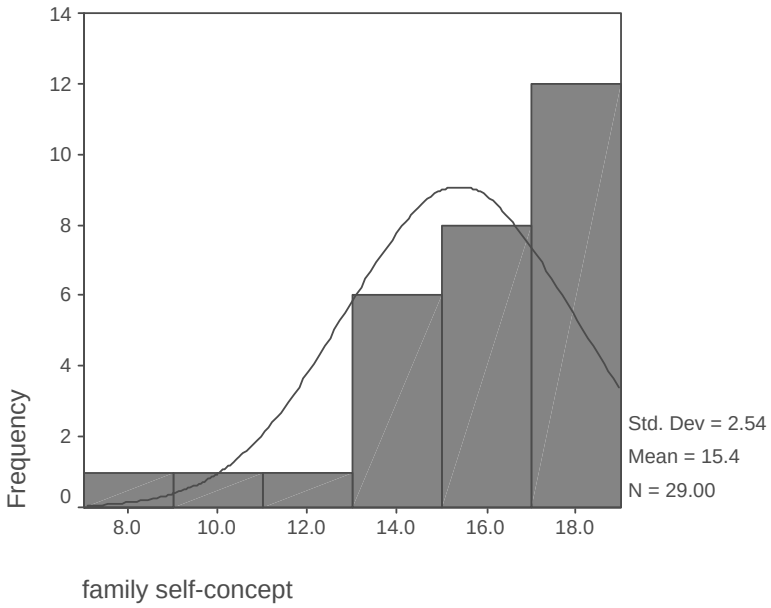

Figure 6.7: Family self-concept

The sample scored the highest on the subscale Family Self-Concept (Average score of 15 out of a possible 18). This would indicate that the sample identifies with a person who is accepted by his family members, and is happy within his family environment. The sample represented themselves as being respected by family members. They would like to think that family members could come to them for advice, and that they in turn could count on them for support. According to Vrey (n.d.), a person's self-concept is easily manifested within a family environment, and this can leave the person with a feeling of pride. This also makes it easier for such an individual to form healthy relationships outside of the family environment.

When the discussion group was asked how they view these aspects of the research findings, they agreed that the family environment is a very important part of their self-concept. One member replied that his family was of paramount importance in his path of healing. The group related how they became more aware of, and dependant on, the support of their family members. It became

important to keep family relationships strong, and to keep loved ones close, as the realisation of how close to death one walks becomes so clear. Another member related how he became more aware of the meaning of the wedding vows he took many years ago, that 'through better or worst' implies that it is not about how *he* was going to handle this, but rather how *they* were going to handle it.

6.3.4. Social Self-Concept

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5.00	1	3.4	3.4	3.4
	7.00	1	3.4	3.4	6.9
	8.00	2	6.9	6.9	13.8
	9.00	2	6.9	6.9	20.7
	10.00	1	3.4	3.4	24.1
	11.00	3	10.3	10.3	34.5
	12.00	3	10.3	10.3	44.8
	14.00	2	6.9	6.9	51.7
	15.00	2	6.9	6.9	58.6
	16.00	4	13.8	13.8	72.4
	17.00	7	24.1	24.1	96.6
	18.00	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

Table 6.8: Social self-concept

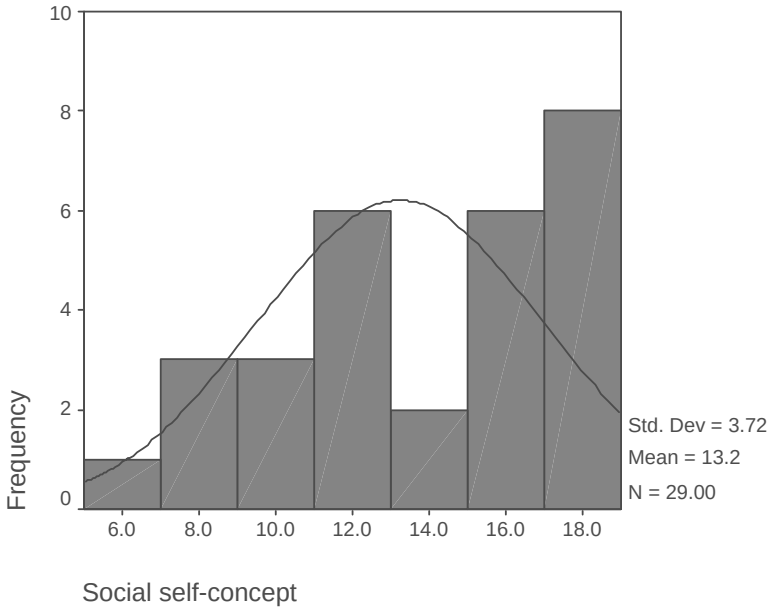

Figure 6.8: Social self-concept

The sample group identified to a lesser extent with the Social subscale, with an average score of 13 out of a possible 18. According to this the sample identifies with a person who is friendly towards others and popular amongst people of the same gender. They like to think that people like to spend time with them, and that they can easily make new friends. The sample identifies with being popular and happy in the presence of others.

As this subscale was not a significant factor in the research results, the researcher did not include it as a topic of discussion during the feedback and discussion session. The sample group was only asked to comment on subscales that were significantly high or low.

6.3.5. Values Self-Concept

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5.00	1	3.4	3.4	3.4
	8.00	1	3.4	3.4	6.9
	9.00	2	6.9	6.9	13.8
	10.00	1	3.4	3.4	17.2
	11.00	4	13.8	13.8	31.0
	12.00	5	17.2	17.2	48.3
	14.00	3	10.3	10.3	58.6
	15.00	3	10.3	10.3	69.0
	16.00	3	10.3	10.3	79.3
	17.00	2	6.9	6.9	86.2
	18.00	4	13.8	13.8	100.0
	Total	29	100.0	100.0	

Table 6.9: Values self-concept

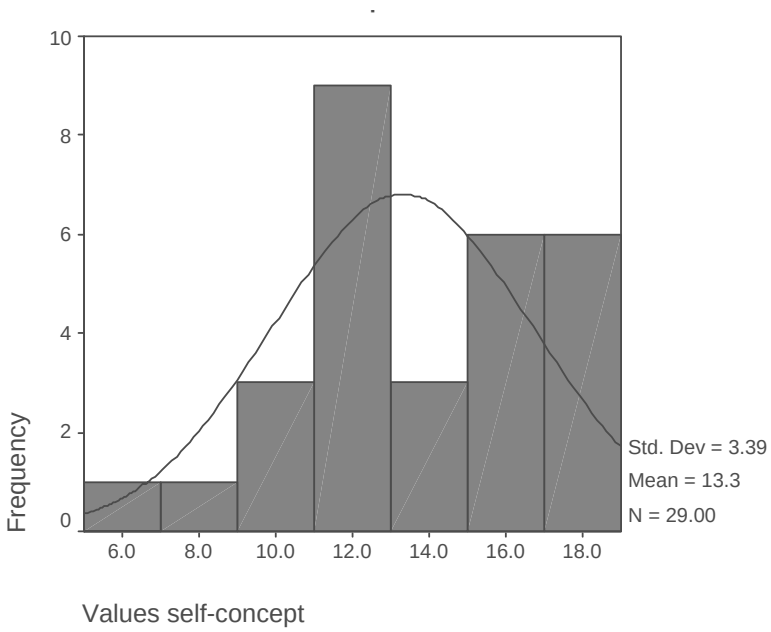

Figure 6.9: Values self-concept

The sample also identified to a lesser extent with the Values subscale, with an average score of 13 out of a possible 18. This indicates identification with moral and religious values. The sample identifies with a person who is honest, and respects the needs of others. They like to take responsibility for the well being of

others, and believe that honesty, goodness, trustworthiness and trust are essential aspects of daily life.

As was the case with the Social subscale, the researcher decided not to introduce this subscale as a topic of discussion at the feedback and discussion session, as the sample did not primarily identify with this subscale.

6.3.6. Self-critique scale

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.00	4	13.8	13.8	13.8
	4.00	2	6.9	6.9	20.7
	5.00	4	13.8	13.8	34.5
	6.00	4	13.8	13.8	48.3
	7.00	7	24.1	24.1	72.4
	8.00	3	10.3	10.3	82.8
	9.00	2	6.9	6.9	89.7
	10.00	3	10.3	10.3	100.0
	Total	29	100.0	100.0	

Table 6.10: Self-critique

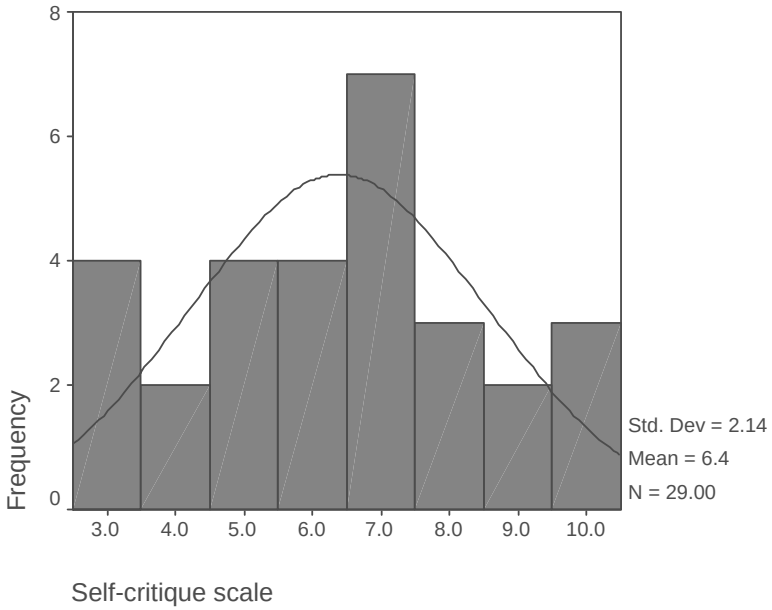

Figure 6.10: Self-critique

The sample had an average score of 6 out of a possible 10 on the Self-Critique scale. This would indicate that the sample as a whole did tend to be honest about many aspects of their self-concept. The correlational relationship between the Self-Critique scale and the other subscales on the ASCS will be discussed later.

6.3.7. Summary

The mean scores of the sample on the subscales of the ASCS does not seem to be clearly differentiated, as they are all relatively close. This implies that the sample identified to some extent with all of the subscales, including the Self-Critique subscale. The correlations between the scores on the Self-Critique subscale and the other subscales will be discussed later in this chapter.

6.4. DESCRIPTION OF SCORES ON THE EPI

6.4.1. Trustful Dimension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	8.00	1	3.4	3.4	3.4
	25.00	1	3.4	3.4	6.9
	37.00	3	10.3	10.3	17.2
	43.00	1	3.4	3.4	20.7
	58.00	1	3.4	3.4	24.1
	66.00	1	3.4	3.4	27.6
	74.00	1	3.4	3.4	31.0
	79.00	1	3.4	3.4	34.5
	82.00	4	13.8	13.8	48.3
	92.00	4	13.8	13.8	62.1
	95.00	4	13.8	13.8	75.9
	98.00	4	13.8	13.8	89.7
	99.00	3	10.3	10.3	100.0
	Total	29	100.0	100.0	

Table 6.11: Trustful dimension

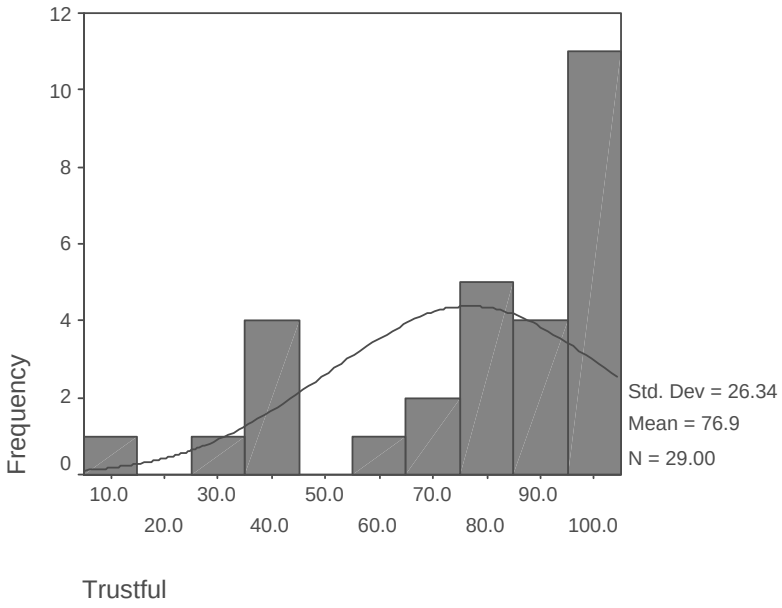

Figure 6.11: Trustful dimension

The sample identified the most with the Trustful dimension (an average of 77 out of a possible 99). According to Plutchik & Kellerman (1974), this would indicate that the sample as a whole would tend towards being accepting, trustful, dutiful and gullible, and would rather keep things simple than to complicate matters. They identify with a person on whom others can depend, and can often be suggestible.

Again the discussion group touched upon the importance of relationships when they were asked to comment on this aspect of the research findings. It is important to build relationships, within the Heart Club but also elsewhere, as this makes it easier to deal with the implications of the heart disease. By being trustful, and accepting others within this group, the discussion group felt that they could get support from others who were further along a healing path than they were.

6.4.2. Dyscontrolled Dimension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	1	3.4	3.4	3.4
	3.00	1	3.4	3.4	6.9
	9.00	1	3.4	3.4	10.3
	21.00	1	3.4	3.4	13.8
	28.00	3	10.3	10.3	24.1
	36.00	2	6.9	6.9	31.0
	44.00	2	6.9	6.9	37.9
	51.00	5	17.2	17.2	55.2
	58.00	4	13.8	13.8	69.0
	65.00	1	3.4	3.4	72.4
	72.00	2	6.9	6.9	79.3
	76.00	1	3.4	3.4	82.8
	79.00	1	3.4	3.4	86.2
	86.00	2	6.9	6.9	93.1
	92.00	2	6.9	6.9	100.0
	Total	29	100.0	100.0	

Table 6.12: Dyscontrolled dimension

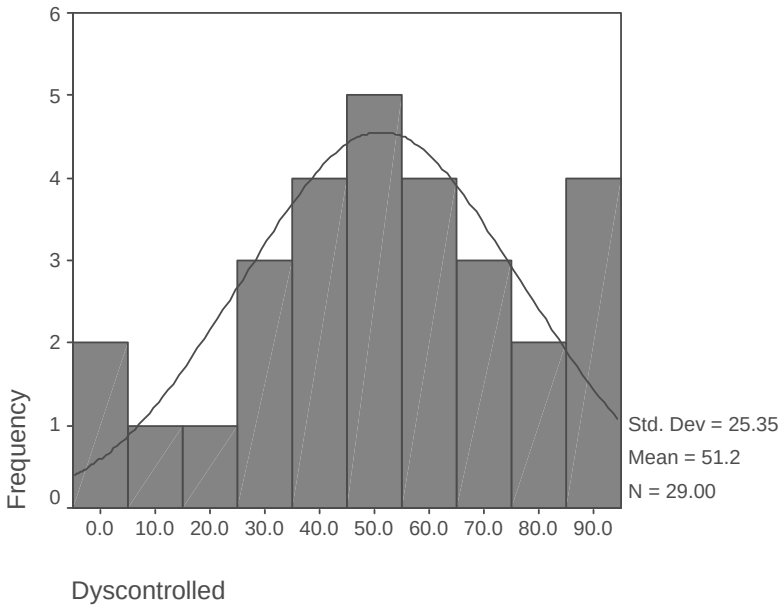

Figure 6.12: Dyscontrolled dimension

This is the only EPI dimension that the sample group did not identify with, either positively or negatively. With an average score of 51 out of a possible 99, it would seem as if the sample as a whole does not find the dimension of Dyscontrolled applicable to them.

As a result of this, the researcher decided not to use this dimension as a topic of discussion during the feedback and discussion session.

6.4.3. Timid Dimension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19.00	2	6.9	6.9	6.9
	23.00	2	6.9	6.9	13.8
	35.00	2	6.9	6.9	20.7
	42.00	2	6.9	6.9	27.6
	55.00	2	6.9	6.9	34.5
	57.00	1	3.4	3.4	37.9
	62.00	4	13.8	13.8	51.7
	68.00	2	6.9	6.9	58.6
	74.00	3	10.3	10.3	69.0
	80.00	4	13.8	13.8	82.8
	82.00	1	3.4	3.4	86.2
	84.00	2	6.9	6.9	93.1
	88.00	2	6.9	6.9	100.0
	Total	29	100.0	100.0	

Table 6.13: Timid dimension

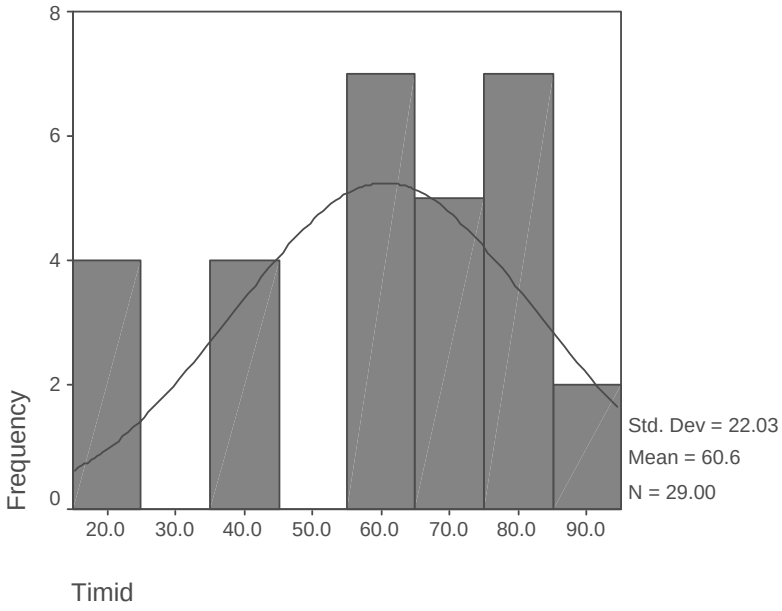

Figure 6.13: Timid dimension

The Timid dimension was identified with, with an average score of 61 out of a possible 99. A high score on this dimension points towards a person who tends to be cautious and apprehensive. The sample perceives themselves as being similar to a person who is fretful about what others might say or think about them, and often worry about getting into trouble.

When the discussion group was asked how they understood the identification with timidness, and what it implies, they agreed that it was not always easy for a person to become part of the Heart Club, and that people could sometimes be hesitant to join socially. One member related how he sometimes sees how another member appears cautious, and that he will then go over and talk to this person, to make them feel more at home. According to the group it is not always easy to talk to others about emotional distress.

6.4.4. Depressed Dimension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4.00	5	17.2	17.2	17.2
	10.00	3	10.3	10.3	27.6
	17.00	4	13.8	13.8	41.4
	26.00	2	6.9	6.9	48.3
	35.00	2	6.9	6.9	55.2
	45.00	2	6.9	6.9	62.1
	49.00	1	3.4	3.4	65.5
	62.00	1	3.4	3.4	69.0
	69.00	3	10.3	10.3	79.3
	74.00	4	13.8	13.8	93.1
	86.00	1	3.4	3.4	96.6
	94.00	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

Table 6.14: Depressed dimension

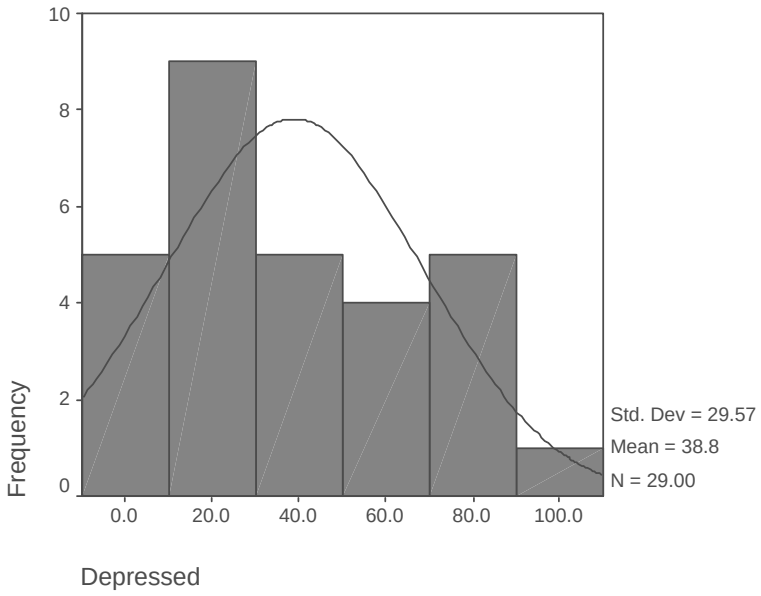

Figure 6.14: Depressed dimension

Unlike the case with of the ASCS, where the sample group identified with all of the subscales to some extent, they did not identify with some of the dimensions on the EPI. Some significantly low scores were found on several of these subscales. On one of these scales, the Depressed Dimension, the sample group

indicated an average score of 39 out of a possible 99. A low score on this dimension indicates that the sample group identifies with an individual, who is satisfied with life, although it might also indicate signs of denial.

The discussion group was reluctant to discuss depression, and evaded the topic as much as possible. One member did remark that he had received psychological support to help him in the past. It appeared to the researcher as if depression was much more present than the low score on the Depressed subscale seem to indicate. It seemed as if it is easier sometimes to deny feelings of depression, rather than to express them. The mood of the group was very sombre at times, when mention was made of the 'metal coffin' that passes through the group from time to time. The metal coffin symbolises the casket that a recently deceased member of the group is placed into to be buried.

6.4.5. Distrustful Dimension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5.00	2	6.9	6.9	6.9
	9.00	1	3.4	3.4	10.3
	12.00	3	10.3	10.3	20.7
	17.00	4	13.8	13.8	34.5
	18.00	1	3.4	3.4	37.9
	25.00	1	3.4	3.4	41.4
	33.00	5	17.2	17.2	58.6
	41.00	2	6.9	6.9	65.5
	50.00	4	13.8	13.8	79.3
	53.00	1	3.4	3.4	82.8
	57.00	2	6.9	6.9	89.7
	64.00	2	6.9	6.9	96.6
	88.00	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

Table 6.15: Distrustful dimension

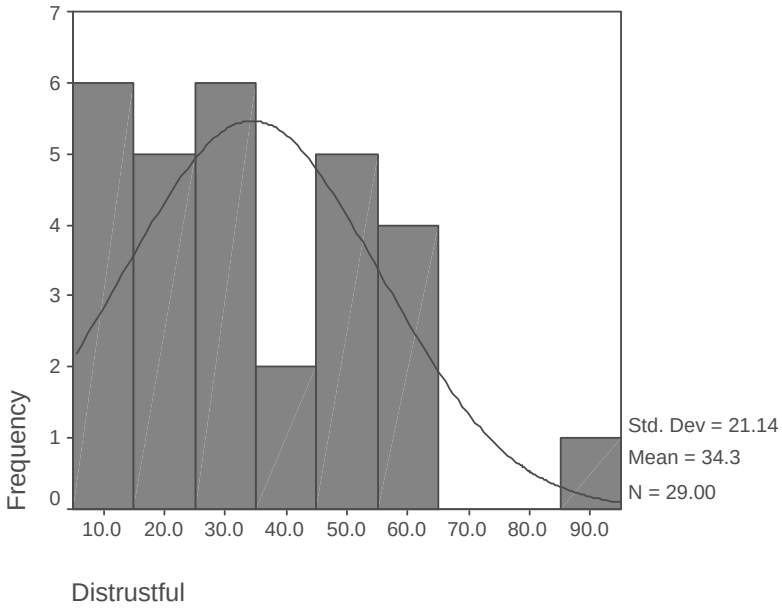

Figure 6.15: Distrustful dimension

The dimension that the sample found the least amount of identification with, was the Distrustful dimension, as is indicated by an average score of 34 out of a possible 99. The sample does not identify with being stubborn, resentful and sarcastic, and does not want to be perceived by others as being guarded or passive-aggressive. They would rather identify with a person who is mostly uncritical and does not reject others.

The participants in the discussion group were very much in agreement that they do not wish to be identified with a distrustful person, as this is a person who is often shunned by others. The importance of significant relationships, and being able to trust and be trusted, was emphasised by the group.

6.4.6. Controlled Dimension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	1	3.4	3.4	3.4
	4.00	1	3.4	3.4	6.9
	6.00	2	6.9	6.9	13.8
	13.00	2	6.9	6.9	20.7
	17.00	1	3.4	3.4	24.1
	22.00	2	6.9	6.9	31.0
	28.00	3	10.3	10.3	41.4
	29.00	1	3.4	3.4	44.8
	35.00	3	10.3	10.3	55.2
	42.00	3	10.3	10.3	65.5
	49.00	4	13.8	13.8	79.3
	61.00	3	10.3	10.3	89.7
	68.00	1	3.4	3.4	93.1
	75.00	2	6.9	6.9	100.0
	Total	29	100.0	100.0	

Table 6.16: Controlled dimension

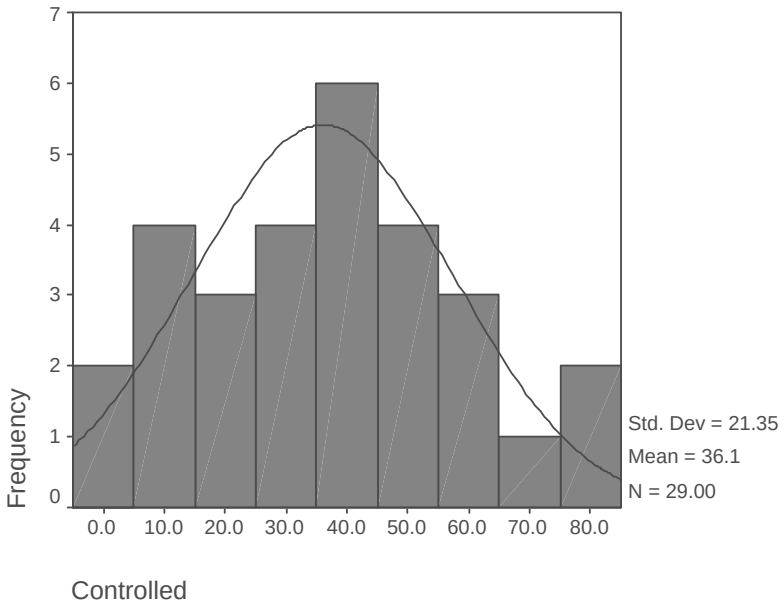

Figure 6.16: Controlled dimension

The sample did not identify with the dimension of Control, as is indicated by an average score of 36 out of a possible 99. The subgroup do not present as being similar to a person who always needs to be in control, who is compulsive and meticulous. They rather present as more similar to a person who takes things as they come, and do not always plan for the future. This person is often disorganised in thinking as well as in behaviour.

Most of the members of the discussion group came from a background of having been subjected to a very controlled environment in the Military, but who are now retired, and try to live a more relaxing life. Also in light of reducing stress (a risk factor for CHD) the discussion group felt that it would be a good thing to not be too controlled.

6.4.7. Aggression Dimension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4.00	1	3.4	3.4	3.4
	7.00	1	3.4	3.4	6.9
	10.00	2	6.9	6.9	13.8
	14.00	5	17.2	17.2	31.0
	20.00	4	13.8	13.8	44.8
	25.00	1	3.4	3.4	48.3
	32.00	1	3.4	3.4	51.7
	39.00	2	6.9	6.9	58.6
	47.00	2	6.9	6.9	65.5
	50.00	1	3.4	3.4	69.0
	53.00	1	3.4	3.4	72.4
	63.00	1	3.4	3.4	75.9
	67.00	1	3.4	3.4	79.3
	70.00	2	6.9	6.9	86.2
	74.00	2	6.9	6.9	93.1
	80.00	1	3.4	3.4	96.6
	95.00	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

Table 6.17: Aggression dimension

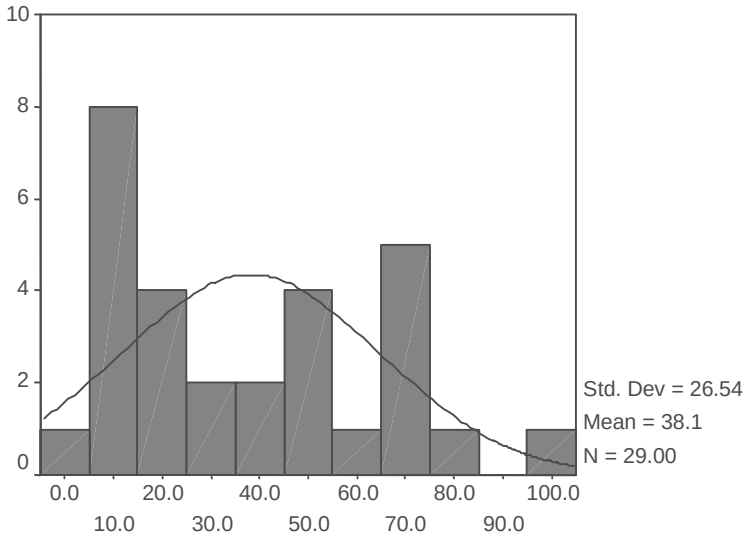

Figure 6.17: Aggression dimension

The average score of 38 out of a possible 99 on the Aggression dimension indicates that the sample does not identify with a quarrelsome person who says whatever he thinks and expresses aggression in an overt manner. They identify more with a docile, passive person, who does not overtly express aggression.

The discussion group felt that they did not experience too much overt aggression between other members of the Heart Club, but that there was, at times, aggression between people on a one-to-one basis. They did concede that they do sometimes feel aggressive, but prefer not to act on it.

6.4.8. Gregarious Dimension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10.00	1	3.4	3.4	3.4
	20.00	2	6.9	6.9	10.3
	24.00	1	3.4	3.4	13.8
	34.00	1	3.4	3.4	17.2
	45.00	1	3.4	3.4	20.7
	52.00	2	6.9	6.9	27.6
	59.00	3	10.3	10.3	37.9
	67.00	3	10.3	10.3	48.3
	75.00	4	13.8	13.8	62.1
	87.00	7	24.1	24.1	86.2
	99.00	4	13.8	13.8	100.0
	Total	29	100.0	100.0	

Table 6.18: Gregarious dimension

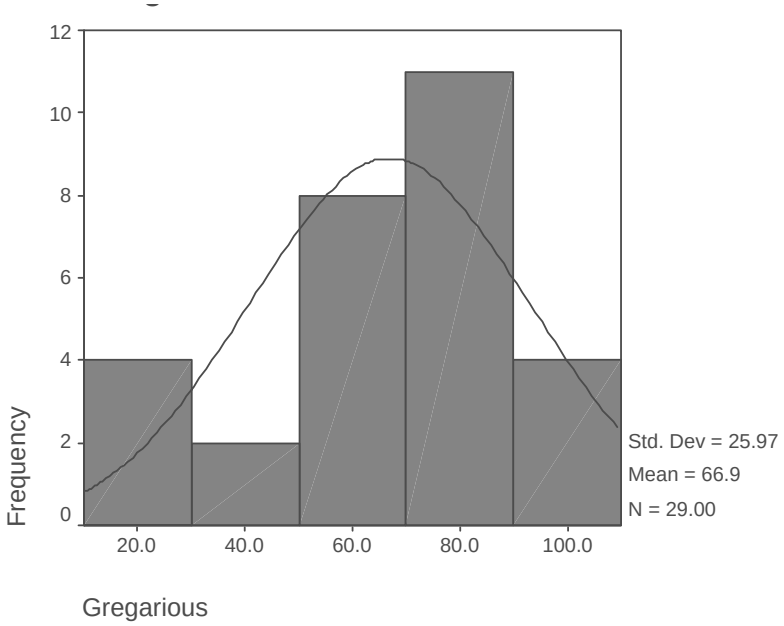

Table 6.18: Gregarious dimension

The sample also identified strongly with the Gregarious Dimension, with an average score of 67 out of a possible 99. This indicated their identification with a sociable, friendly demeanour, and a person who is fairly extroverted. There was a strong focus on the importance of the company of others, and having meaningful relationships.

Once again identifying with a gregarious demeanour emphasised the importance of a support structure for the discussion group. One member mentioned how it is important that the members look out for one another.

6.4.9. Bias Dimension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	9.00	1	3.4	3.4	3.4
	10.00	1	3.4	3.4	6.9
	28.00	1	3.4	3.4	10.3
	36.00	1	3.4	3.4	13.8
	45.00	1	3.4	3.4	17.2
	50.00	3	10.3	10.3	27.6
	55.00	1	3.4	3.4	31.0
	60.00	1	3.4	3.4	34.5
	66.00	4	13.8	13.8	48.3
	75.00	1	3.4	3.4	51.7
	86.00	1	3.4	3.4	55.2
	90.00	4	13.8	13.8	69.0
	93.00	1	3.4	3.4	72.4
	95.00	8	27.6	27.6	100.0
	Total	29	100.0	100.0	

Table 6.19: Bias dimension

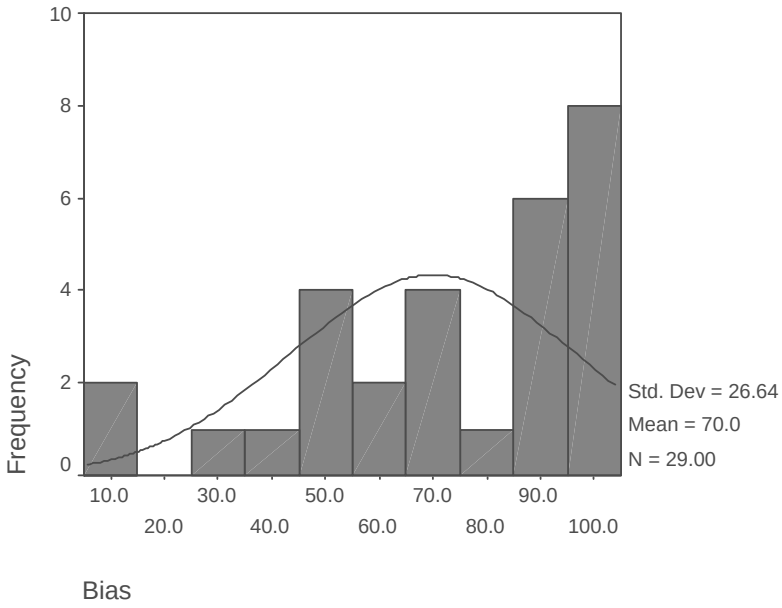

Figure 6.19: Bias dimension

The sample obtained an average score of 70 out of a possible 99 on the Bias dimension. This indicates that the sample as a whole tended to rather pick the more sociable acceptable of the two paired test items.

6.4.10. Summary

From the description of the scores obtained from the EPI, It became apparent that the sample group strongly identified with more positive emotions, and do not identify with more negatively associated emotions. This will be discussed in more detail in the next section.

6.5. CORRELATIONS

The profile that is indicated by the above discussion reflects that the sample very strongly identified with positive psychological aspects, particularly those of self-concept and emotions. As noted earlier, both of the measurement instruments

used have some form of a scale to indicate whether the individual taking the test tends to 'fake good' or 'fake bad'. To ascertain whether or not the above profile is a 'true' reflection of the sample's psychological make-up, the various subscales and dimensions where correlated with the self-critique/bias scales to indicate to what extent this sample presents themselves as positive or negative.

6.5.1. Correlations on the ASCS

			Self-Critique Scale
Spearman rho	**Physical Self-Concept**	**Correlation Coefficient**	-.430(*)
		Sig. (2-tailed)	.020
	Personal Self-Concept	**Correlation Coefficient**	-.535(**)
		Sig. (2-tailed)	.003
	Family Self-Concept	**Correlation Coefficient**	-.424(*)
		Sig. (2-tailed)	.022
	Social Self-Concept	**Correlation Coefficient**	-.383(*)
		Sig. (2-tailed)	.040
	Values Self-Concept	**Correlation Coefficient**	-.476(**)
		Sig. (2-tailed)	.009

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 6.20: Correlations on the ASCS

The Spearman rank-order correlation coefficient was used to determine the extent to which the subscales were negatively/positively associated with the Self-Critique subscale. A statistically significant negative correlation between the Self-Critique subscale and the other subscale on the ASCS would indicate that there exists a relationship between these scales. A negative correlation would indicate a *high* score on the Self-Critique subscale coupled with a *low* score on the other subscale, or a *low* score on the Self-Critique subscale coupled with a *high* score on the other subscale. The reason for this is that the Self-Critique subscale is made up of ten items that refer to different situations that an average person would admit have been guilty of at some point in their lives. The *higher* this score, the more this person is willing to admit to being human and flawed in

some instances. This is an indication of a positive self-concept (Very, n.d.). On the other hand, a *low* score would be indicative of a person not being willing to admit to 'normal' flawed behaviour, and thus faking good. With other words, a person with a high score on all the other subscales, but a low score on the Self-Critique subscale can be said to be presenting himself in a more positive light than might be the case.

There were statistically significant negative correlations between Self-Critique subscale and all of the other Self-Concept subscales. The Social (r = -0.38), Family (r = -0.42) and Physical (r = -0.43) Subscales were all significantly correlated at the 0.05 level (2-tailed) with the Self-Critique Subscale. The Values (r = -0.48) and Personal (r = -0.54) Subscales were correlated most significantly, on the 0.01 level (2-tailed).

That there exists a relationship between the Self-Critique scale and the other subscales of the ASCS is clear from this analysis. What is however not clear, is whether or not this relationship exist as a result of a *low* or a *high* score on the Self-critique subscale. Reference to table 6.10 makes it clear that some of the participants indicated a high score on the Self-Critique subscale. An examination of the raw data would indicate that in some cases there were a *high* score, and in others a *low* score. Participants who indicated a *high* score on the Self-Critique subscale tended to score *low* on the other subscales, and visa versa. Based on this, the researcher accepts the hypotheses that there exists a negative correlation between the Self-Critique subscale and the other subscales, but cannot make the assumption that this was due to the sample presenting themselves in a better light than they might in reality be experiencing. It appears from the data that many of the participants presented with a positive self-concept.

6.5.2. Correlations on the EPI

			Bias
Spearman rho	**Trustful**	**Correlation Coefficient**	.828(**)
		Sig. (2-tailed)	.000
	Dyscontrolled	**Correlation Coefficient**	.044
		Sig. (2-tailed)	.819
	Timid	**Correlation Coefficient**	.437(*)
		Sig. (2-tailed)	.018
	Depressed	**Correlation Coefficient**	-.650(**)
		Sig. (2-tailed)	.000
	Distrustful	**Correlation Coefficient**	-.471(**)
		Sig. (2-tailed)	.010
	Controlled	**Correlation Coefficient**	.142
		Sig. (2-tailed)	.463
	Aggressive	**Correlation Coefficient**	-.837(**)
		Sig. (2-tailed)	.000
	Gregarious	**Correlation Coefficient**	.447(*)
		Sig. (2-tailed)	.015

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 6.21: Correlations on the EPI

On the EPI, a statistically significant positive correlation between the Bias dimension and the positive emotional dimensions, e.g. Trustful, Timid, Controlled and Gregarious would indicate a tendency in the sample to present themselves more positively than they might in reality experience it. The reason for this is that the score obtained from the Bias dimension is expressed on a continuum, ranging from 0 (extremely faking bad) to 99 (extremely faking good). This implies that a *high* score on the Bias dimension and a *high* score on one of the positive dimensions would indicate a tendency to fake good. In the same way, a statistically significant negative correlation with the negative emotional dimensions, e.g. Dyscontrolled, Depressed, Distrustful and Aggressive would indicate the same. In other words, a *high* score on the Bias dimension coupled

with a *low* score on negative dimensions would indicate that the sample do not wish to present with these emotions, even though they may in reality experience them. As can be seen from Table 6.19, the majority of participants indicated a high score on the Bias dimension, which means that the sample as a whole tended towards faking good. This makes the correlational analysis easier to interpret than was the case with the ASCS, where the Bias subscale did not clearly indicate faking good behaviour.

It should be emphasised that a *low* score on the ASCS's Self-Critique subscale implies that the person was presenting himself in a positive light, while a *high* score on the EPI's Bias dimension implies the same.

There were statistically significant correlations between the Bias dimension and all of the other dimensions, except for the Dyscontrolled and Controlled dimensions, which did not prove significant. The Timid (r = 0.44), Gregarious (r = 0.45) and Trustful (r = 0.83) dimensions had significantly *positive* correlations, with the Timid and Gregarious dimensions being significant on the 0.05 level (2-tailed), and the Trustful dimension being significant on the 0.01 level (2-tailed).

The Distrustful (r = -0.47), Depressed (r = -0.65) and Aggression (r = -0.84) dimensions had statistically significant *negative* correlations with the Bias dimension, with all three of these dimensions being significant on the 0.01 level.

Based on these results, the researcher can accept the hypotheses stating that a relationship exists between the Bias dimension and the Trustful, Timid, Depressed, Distrustful, Aggression, and Gregarious dimensions on the EPI. The hypotheses relating to a relationship between the Bias Dimension and the Controlled and Dyscontrolled Dimensions are however rejected.

The results of the analysis indicated that the sample tended to present themselves in a more positive light, relating to emotional state, than they might in reality experience.

6.5.3. Discussion

The discussion group could easily relate to these findings. They emphasised how important it is to them to maintain positive energy, to be able to meet their goals. By always looking for the positive, and striving to maintain it, it makes it easier to bear when the ‘metal coffin’ passes by. The discussion group mentioned that the nature of the Heart Club has an influence on the members’ psychological make-up. One member remarked that people who are negative and do not at least try to be positive would not have joined the club in the first place. The discussion group felt that if this same study were done on a cardiological sample that does not come to regular exercise sessions, the results would have been different. The influence of the group on its members’ psychological make-up is undeniable. The people who come to this club are the people who still have hope, who still strive to better themselves, who want to make a change. They motivate each other, and keep the negative feelings at bay. Even though the negative feelings are there, they are easier to deal with in a supportive community like this. As a result of this, the group as a whole gains a lot of reasons to feel positive about themselves, which translates into the positive Self-Concept that was identify in some of the members.

When asked how the individuals in the discussion group deal with negative emotions, some said that they have gone for psychological support in the past, and others replied that it is sometimes the easiest to ignore the feelings rather than be consumed by the sheer intensity of them. Based on this the researcher invited the participants to contact him on an individual basis, as to make use of the psychological service that is offered. To make this easier for the group, the researcher made certain that they have access to his contact details, and again assured them that any therapeutic contact would remain strictly confidential.

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

7.1. INTRODUCTION

This concluding chapter offers a brief discussion and summary of the research findings, and also indicates to what extent the study has succeeded in addressing the aims as set out in the first chapter. Also of importance is to identify limitations that the researcher has experienced, and make recommendations for future research.

7.2. DISCUSSION

The results of this research study seem to indicate that there is indeed a tendency amongst the sample group to present a favourable psychological picture in terms of emotional make-up. In terms of emotions the sample consistently identified with socially acceptable variables, and chose not to identify with seemingly undesirable psychological variables. Correlations showed that this might not always be a reflection of their actual psychological make-up. With regard to the self-concept of the group, it appears that some of the members of the group tend to present themselves favourably, but that many are in fact in possession of a healthy, positive self-concept.

These results were very insightful to the researcher, as the pure statistical data could easily have been interpreted in terms of the sample being in denial relating to their psychological make-up. Through the input of the discussion group, however, the researcher became aware of how the research findings can be interpreted not as denial, but rather as the survival, support, camaraderie and hope the participants have found in the face of overwhelming odds against them. In a way, the sample has adapted to a very stressful situation, by finding a way of

controlling negative (and possibly dangerous) feelings. By rather focussing on the positive, this specific group can keep each other motivated through social interaction and participation in ‘change’ activities, like exercise and regular health check-ups.

The discussion group placed a great emphasis on the important influence of social interaction on self-concept and emotion. Without the support they found in the Heart Club, the discussion group felt that they would not have been able to keep positive and keep fighting. In this way the self-concept and emotional profile of the sample as a whole is very positive. This makes allowance for individual members who do feel depressed, to tap into the positive energy of the group. This does sometimes make it difficult for a person to express negative feelings in the group context, and members sometimes have to take those feelings elsewhere.

The question that arises for the researcher is whether or not these results can be made applicable to a larger cardiological population, say nationally, or even internationally? It is the opinion of the researcher that these results can be made applicable to other people suffering from CHD, as long as they are also actively involved in a cardiological rehabilitation programme. It cannot be made applicable to individuals who choose not to have social contact with other sufferers of CHD. The researcher feels that these individuals, because of their isolated nature, will present with a different psychological make-up in terms of self-concept and emotion.

An indication of the advantages associated with taking part in a cardiological rehabilitation programme, and having contact with medical professionals on a regular basis, seems to be the unexpected result obtained from this research study. The literature review on the self-concept has indicated the importance of an individual's social environment in the formation of a positive self-concept. Perhaps the social setting at The Heart Club has allowed many members to build

and maintain a positive sense of self. It would seem that a group, like The Heart Club at 1 Military Hospital, is advantageous to the psychological well-being of its members, as long as there is access to a psychologist for individuals who has a need to work through negative feelings.

7.3. SUMMARY

The following aims were originally conceptualised for this research study:

(a). To describe a cardiological sample population in terms of their self-concept and emotional profile in the following specific categories:

- Self-Concept in terms of:
  - Physical self
  - Personal self
  - Family self
  - Social self
  - Value self
  - Self-criticism

- Emotion in terms of:
  - Gregarious dimension
  - Trustful dimension
  - Dyscontrolled dimension
  - Timid dimension
  - Depressed dimension
  - Distrustful dimension
  - Control dimension
  - Aggressive dimension
  - Bias scale

(b) The study also aimed to give an indication of to what extent this presentation reflects their true psychological make-up. This was to be done through the use of two psychometric instruments, the ASCS and the EPI. The ASCS contains five positive subscales (Physical, Personal, Family, Social and Values) of Self-Concept, which was correlated with a Self-Critique subscale. Even though there were significant correlations, it cannot be assumed that this was solely due to the sample faking good. The EPI contains four positive emotional dimensions (Trustful, Timid, Controlled and Gregarious), and 4 negative emotional dimensions (Dyscontrolled, Depressed, Distrustful, and Aggressive) on polar ends of a scale. An individual who wants to present a positive image to the outside world would want to identify with the positive dimensions, and would not want to identify with the negative dimensions.

In accordance with this aim the following hypotheses can be accepted and/or rejected:

Self-Concept:

H_0 – There is no significant correlation between the **physical** self and the self-criticism scales on the self-concept scale **Rejected**
H_1 – There is a significantly *positive* correlation between the **physical** self and the self-criticism scales on the self-concept scale **Accepted**

H_0 – There is no significant correlation between the **personal** self and the self-criticism scales on the self-concept scale **Rejected**
H_1 – There is a significantly *positive* correlation between the **personal** self and the self-criticism scales on the self-concept scale **Accepted**

H_0 - There is no significant correlation between the **family** self and the self-criticism scales on the self-concept scale **Rejected**

H_1 - There is a significantly *positive* correlation between the **family** self and the self-criticism scales on the self-concept scale **Accepted**

H_0 - There is no significant correlation between the **social** self and the self-criticism scales on the self-concept scale **Rejected**
H_1 - There is a significantly *positive* correlation between the **social** self and the self-criticism scales on the self-concept scale **Accepted**

H_0 - There is no significant correlation between the **value** self and the self-criticism scales on the self-concept scale **Rejected**
H_1 - There is a significantly *positive* correlation between the **value** self and the self-criticism scales on the self-concept scale **Accepted**

Emotion:

H_0 – There is no significant correlation between the **gregarious** dimension and the bias dimension on the Emotions Profile Index **Rejected**
H_1 – There is a significantly *positive* correlation between the **gregarious** dimension and the bias dimension on the Emotions Profile Index **Accepted**

H_0 – There is no significant correlation between the **trustful** dimension and the bias dimension on the Emotions Profile Index **Rejected**
H_1 - There is a significantly *positive* correlation between the **trustful** dimension and the bias dimension on the Emotions Profile Index **Accepted**

H_0 - There is no significant correlation between the **dyscontrolled** dimension and the bias dimension on the Emotions Profile Index **Accepted**
H_1 - There is a significantly *negative* correlation between the **dyscontrolled** dimension and the bias dimension on the Emotions Profile Index **Rejected**

H_0 - There is no significant correlation between the **timid** dimension and the bias dimension on the Emotions Profile Index **Rejected**
H_1 - There is a significantly *positive* correlation between the **timid** dimension and the bias dimension on the Emotions Profile Index **Accepted**

H_0 - There is no significant correlation between the **depressed** dimension and the bias dimension on the Emotions Profile Index **Rejected**
H_1 - There is a significantly *negative* correlation between the **depressed** dimension and the bias dimension on the Emotions Profile Index **Accepted**

H_0 - There is no significant correlation between the **distrustful** dimension and the bias dimension on the Emotions Profile Index **Rejected**
H_1 - There is a significantly *negative* correlation between the **distrustful** dimension and the bias dimension on the Emotions Profile Index **Accepted**

H_0 - There is no significant correlation between the **control** dimension and the bias dimension on the Emotions Profile Index **Accepted**
H_1 - There is a significantly *positive* correlation between the **control** dimension and the bias dimension on the Emotions Profile Index **Rejected**

H_0 - There is no significant correlation between the **aggressive** dimension and the bias dimension on the Emotions Profile Index **Rejected**
H_1 - There is a significantly *negative* correlation between the **aggressive** dimension and the bias dimension on the Emotions Profile Index **Accepted**

(c) Lastly to disseminate the research findings back to the sample group, to gain insight into their experience and thoughts on the subject matter, at a feedback and discussion session.

These aims have been achieved through a thorough literature overview, followed by a detailed examination of data obtained from both the psychometric instrumentation and the feedback and information group discussion.

7.4. LIMITATIONS OF STUDY

As noted, this research study is limited in that it cannot be applied to all persons who are suffering from CHD and have undergone surgery as a result thereof. It is primarily applicable to individuals who are active participants in a cardiological rehabilitation programme, and have social interaction with each other.

Due to the limitations of the study, the researcher was not able to further investigate the nature of the significant relationship between the Self-Critique and other scales on the ASCS.

Another limitation is the size of the sample. Only 29 individuals participated in the research study, which raises further questions regarding the applicability of the study to a larger population.

The sample group used in this study was composed of individuals with diverse demographical characteristics. As a result of this, and the small sample size, the researcher was unable to make any inferences based on how self-concept and emotion manifests differently relating to factors such as gender, age and years living with CHD.

7.5. RECOMMENDATIONS

Based on these limitations it is recommended that this research project be repeated in a variety of different contexts, while making use of larger samples. One important aspect would be to indicate how self-concept and emotion manifests in individuals who do not take part in a cardiological rehabilitation

programme. This, together with research in similar rehabilitation programmes, like that found at 1 Military Hospital, will make it possible to make general conclusions about the cardiological population at large.

It is also recommended that the role of different demographical factors like gender, age and years living with CHD on the self-concept and emotional profile of individuals be researched further. This can allow researchers to get a picture of the chronological process that an individual undergoes psychologically, from first being diagnosed with CHD to being in postoperative rehabilitation.

It is recommended that the significant relationship that was identified on the ASCS be investigated further, to establish with more clarity what it implies.

This research study focused on the psychological constructs of self-concept and emotion. It is recommended research be conducted into how such a population presents in terms of other psychological constructs, and at some point look at the underlying relationship between all of the different constructs.

7.6. CONCLUSION

This study has exposed the need for research into the psychological make-up of individuals suffering from CHD. It is hoped that the severity and impact of CHD in the lives of millions of people in South Africa can be lessened through the application of knowledge acquired through research similar to this study. A lot more is required however to enable professionals working in multi-disciplinary cardiological settings to maximally serve the psychological needs of patients. The researcher hopes that this study can serve as a primer for further thought on the subject.

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Appendix A

Consent Form for Participation in Research Study in conjunction with the Department of Psychology – University of Pretoria:

The Presentation of Self-Concept and Emotional Profile in a Cardiological Population

Researcher: Mr Charl Louw

(012) 314-0040

The purpose of this research project is to gain an understanding into the psychological make-up of an individual who suffers from some form of cardiological problems, and has undergone surgery as a result thereof. Your participation in this project will entail the following:

- The completing of attached questionnaires, relating to aspects of self-concept and emotional profile, as was explained to you during the initial discussion group.
- The signing of this Informed Consent Form, after you are certain that you understand the implications of participating.
- Returning of said questionnaires at your soonest convenience.
- Attending a voluntary discussion session (the date of which will be confirmed later), at which point the researcher can discuss the findings of the study in detail with you.

The researcher does not foresee any risks involved in participation, and will ensure that all information is treated confidential and respectful.
Participation will be purely on a voluntary basis, and no financial incentives will be provided.
In the same manner you will not be placed at a disadvantage, should you choose *not* to participate.
If, at any point during the research process, you wish to withdrawn your participation you are free to do so.

Please only sign the Consent Form after careful consideration of the following:

1. I, the undersigned, hereby give consent to my participation in the above-mentioned research study.
2. Further I give permission to Mr C Louw that he may use information regarding me for research means, as well as for the publication of such information. This permission is given with the condition that all information will be handled as confidential and that no identifying information regarding me will be made known.
3. In the event of my having any questions that may arise as a result of the research project I am free to contact the researcher at any time, at the telephone number listed below.
4. If you at this point have any more questions or uncertainties regarding the research project you are welcome to discuss it with the researcher.

_____ _____

Signature of Participant Date

Biographical information of Participant:

Relationship to Patient: Self:____ Spouse:____ Other:____

Gender: Male____ Female: ____

Age: _____

Marital Status: _____

Occupation (Or Previous Occupation): _____

If Applicable:

Nature of Cardio Procedure (Bypass, Valve Replacement, etc.): _____

Date of First Cardio Procedure (Year and Month): _____