THE PSYCHOFORTOLOGY OF MALE AND FEMALE PATIENTS UNDERGOING INFERTILITY TREATMENT

by

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“Know how sublime a thing it is to suffer and be strong”

(Henry Wordsworth Longfellow, 1893, p.4).
DECLARATION BY STUDENT

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DECLARATION:

In accordance with Rule G4.6.3, I hereby declare that the above-mentioned treatise/dissertation/thesis is my own work and that it has not previously been submitted for assessment to another University or for another qualification.

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ABSTRACT

Infertility is a complex condition associated with the inability to conceive a child, frequently manifesting itself as a result of various biological factors. A literature review indicated that being on Artificial Reproductive Technology (ART) treatment significantly increases the stress in an individual. While some research has been done on coping processes, and stress and depression levels in individuals on infertility treatment, very little literature is available regarding the coping resources and subjective well-being of individuals on infertility treatment. This psychofortigenic study aimed to explore and describe the coping resources, sense of coherence, satisfaction with life and life happiness of individuals undergoing infertility treatment. Furthermore, this study aimed to compare the coping resources, sense of coherence, satisfaction with life and happiness of males and females undergoing infertility treatment at a privately managed unit. It is imperative to view the results of this study from a gender-based perception as a previous study by Ferreira (2005) indicated significant differences in how males and females perceived infertility treatment.

The sample in this study consisted of 62 voluntary participants from a privately managed health care unit in the Nelson Mandela Metropole. Participants were given a package of questionnaires to complete under the supervision of the researcher and research coordinator of the participating health care unit. The assessment consisted of a biographical questionnaire and four standardised paper and pencil measures. The participants’ coping resources were explored using Hammer and Marting’s (1988) Coping Resource Inventory (CRI), while Antonovsky’s (1987) Orientation to Life Scale was used to measure their sense of coherence (SOC-29). Overall satisfaction with life was assessed using Diener, Emmons, Larson and Griffin’s (1985) Satisfaction with Life Scale (SWLS), while Kamman and Flett’s (1993) Affectometer-2 (AFM-2) was utilized to measure the respondents’ subjective happiness.

A quantitative, exploratory descriptive research design was employed in this study and the participants were chosen by means of a non-probability purposive sampling procedure. Data was analysed using descriptive statistics and independent t-testing. Further investigations were made through Chi square tests which enabled the researcher to draw inferences about differences based on cross tabulations. The reliability coefficient was obtained by calculating Cronbach’s coefficient alpha, which
measured the internal consistency of the four standardized measures utilised in the present study.

The results of the study revealed that participants generally experienced average levels of coping and subjective well-being as measured by the four assessment tools utilised during this study. On comparing the results of the male group and the female group of the particular sample it was found that although both groups obtained relatively average mean scores in general, the men scored slightly higher on the Coping Resources Inventory, Sense of Coherence and Affectometer-2, while the females scored slightly higher than the males on the Satisfaction with Life Scale.

**Key words:** Infertility, Psychofortology, coping, coping resources, sense of coherence, subjective well-being, satisfaction with life and life happiness.

Note: In this study, psychofortology is conceptualised as consisting of two primary components namely: coping and subjective well-being. Coping comprises the constructs of coping resources and sense of coherence, while subjective well-being comprises the constructs of satisfaction with life and life happiness.
CHAPTER 1
INTRODUCTION AND PROBLEM STATEMENT

1.0 Introduction
This chapter provides a general overview of the present study. The need for this study is explained and a concise literature overview is presented. Thereafter, a discussion of the broad aims of the study is presented. Finally, the chapter ends with an outline of the study’s chapters.

1.1 General Overview of the Study
In the past, the field of psychology firmly aligned itself with the pathogenic orientation of the Western medical model which was generally directed at finding out why people fall ill and why they are prone to developing a particular disease (Wissing & Van Eeden, 1997). However, the field of health psychology has moved increasingly away from this pathogenic orientation of the Western World. This movement was brought about by a growing body of research and related literature that urged a reassessment of the existing model for human development and health services (Witmer & Sweeney, 1992).

According to traditional models of health, a person was said to be healthy if they did not display any signs of illness, thus the pathogenic paradigm resulted in a model of the human being as lacking in positive features that make life worth living (Sarafino, 1990). However, in 1958, the World Health Organization defined health as being a state of complete physical, mental and social well-being and not simply the absence of disease or infirmity (Caplan, Engelhardt & McCartney, 1981). This seemed to be in line with the new positive psychology movement that developed only two decades after this definition. The movement towards positive psychology began to catalyze a change in the focus of psychology from one of being a preoccupation with repairing the worst things in life, to building positive qualities (Seligman & Csikszentmihalyi, 2000). Although the pathogenic paradigm produced valuable insight into the causes of illness as well as the
prevention of these illnesses, the exclusive emphasis on the nature of disease ignored other relevant, creative and insightful conclusions about the nature of health.

Compton (2005) suggested that earlier most research was spent seeking ways to treat people in such a way that moved them from a state of negative emotionality to what Compton described as a neutral position. Traditional psychology at the time did not address the question of how to move an individual from this ‘neutral position’ to a more positive place of enhanced adaptability, well-being and happiness. It is with this in mind and in an effort to remedy the relative neglect in these areas of traditional psychology that positive psychology developed (Compton, 2005). Founded by Martin Seligman (1998), positive psychology urges psychologists to adopt a more open and appreciative perspective regarding human potentials, motives, and capacities.

One of the clearest proponents of the salutogenic paradigm, Antonovsky (1979; 1987), suggested that instead of the dichotomy of viewing individuals as being either diseased or healthy, they should be viewed on a health-ease-dis-ease continuum. This health-ease-dis-ease continuum implies that no human being is categorized as either being completely healthy or completely diseased, rather we are all classified as being somewhere between the virtual poles of total wellness and total illness. As a result, the question raised by the salutogenic paradigm became: “Why are people located towards the positive end of the health-ease-dis-ease continuum, and why do they move towards this end?” (Antonovsky, 1979; 1984; 1987). In the salutogenic paradigm we also tend to avoid hysteria about stressors and move away from the traditional question of: ‘How can we eradicate this or that stressor?’ towards a new way of thinking where we ask: ‘How can we learn to live, and live well, with stressors, and, possibly even turn their existence to our advantage?’ The aim thus of this new perspective is to explain health, rather than disease (Antonovsky, 1987).

Constructs used in association with this developing domain of positive psychology that need to be differentiated are psychological health and strengths (psychofortology) and health psychology which are sometimes used synonymously (Wissing & Van Eeden, 1997). Although the domains of health psychology and psychofortology (which studies psychological health and strengths) may overlap on a theoretical level, in this research study they are clearly different in their focus, and differentiation of these two constructs
is necessary to avoid confusion and misunderstanding in argumentation. Psychological health refers to aspects of psychological well-being (e.g., strengths) in the domain of psychofortology, whereas health psychology is a domain of its own, in which the focus is on psychosocial risk or salutogenic factors that influence physical health or illness (Wissing & Van Eeden, 1997).

Health psychology, as mentioned previously, contributes to the maintenance of health, the prevention and treatment of illness, and the identification of the correlates of health, illness and related dysfunctions (Matarazzo, 1990). Hence an investigation into the dynamic relationship between stress, coping and illness is one of the main focus areas of health psychology (Taylor, 1991). Recent research in this area has clearly reflected an emphasis on the salutogenic and fortigenic frameworks. Specifically, in examining stress resistant personality patterns, research indicates that certain individuals have personality characteristics and adaptive coping styles that enable them to resist the harmful effects of stress better than others (Smith & Meyers, 1997). This finding contributes to an added understanding of health and coping as it highlights the influence personality has on one’s coping mechanisms (Compton, 2005).

Strümpfer (1995) argued that there were more issues than just the factors which influenced physical health and proposed the more embracing term of fortigenesis, or origins of strength, as he was of the opinion that these resources were worthy of inclusion into the broader focus. Since there is no specific domain in psychology to allot the study of psychological strengths, the neologism psychofortology, or the science of psychological strength, has been suggested (Wissing & Van Eeden, 1997). The value of developing a science geared toward a better understanding of psychological well-being and strengths lies in the opportunities for capacity building, prevention and enhancement of the quality of life (Wissing & Van Eeden, 1997). A number of researchers have used fortigenic principles such as coping and subjective well-being in their research models (Brown, 2002; Cairns, 2001; Gal, 2004; Hatuell, 2004; Van der Walt, 2002 & Vorster, 2002).

For the purposes of this study positive psychology or psychofortology were grouped into two broad categories: namely coping (i.e., coping resources and sense of coherence) and subjective well-being (i.e., satisfaction with life and life happiness). The current
study measured the coping resources, sense of coherence, satisfaction with life and life happiness of male and female patients undergoing infertility treatment at a privately managed health care unit in the Nelson Mandela Metropole\(^1\) area. This particular population was chosen as an example of a group of individuals experiencing a similar potential stressor. The aspects of coping resources (as measured by Hammer and Marting’s (1988) Coping Resources Inventory), sense of coherence (as measured by Antonovsky’s (1987) Sense of Coherence Questionnaire), satisfaction with life (as measured by Diener, Emmons, Larsen and Griffin’s (1985a) Satisfaction with Life Scale), and life happiness (as measured by Kamman and Flett’s (1983) Affectometer-2 Scale) were chosen as constructs of relevance for the conceptualization and operationalization of the psychofortology of male and female patients in the present study. The aforementioned section focused on the introduction of psychofortology and its use as a theoretical model to conceptualise and operationalise research. Since this section is merely a brief introduction, psychofortology is dealt with in more detail in Chapter 3. The next section focuses on the rationale for this study.

### 1.2 Rationale for this Study/ Problem Statement

The context of the current study is patients undergoing infertility treatment at a privately managed health care unit in the Nelson Mandela Metropole area. For individuals and couples who are diagnosed with infertility every year, the diagnosis brings with it a whole range of new challenges. Patients must not only confront the physical aspects of infertility, but also the psychological and social impact that accompanies this condition. A crisis such as this is often a turning point in an individual’s as well as a couple’s life (Ferreira, 2005). The stress of dealing with a condition such as infertility brings about prolonged uncertainty as well as intense personal strain which can have a profound and lasting impact on an individual (Personal Communication, Dean\(^2\), 2004; Ferreira, 2005).

In an attempt to gain insight into the way patients undergoing infertility treatment find the strength to complete their treatment cycles, and to endure and overcome the pressures

---

\(^1\) Previously known as Port Elizabeth

\(^2\) Mrs. L. Dean is a Clinical Psychologist in the Nelson Mandela Metropole area that specializes in patients undergoing infertility treatment. She is closely linked to the participating Infertility and Wellness Clinic.
associated in order to continue their lives in spite of a negative treatment/pregnancy result, the researcher found it necessary to investigate the coping (i.e., coping resources and sense of coherence) and subjective well-being (i.e., satisfaction with life and life happiness) of patients undergoing infertility treatment.

The desire to have a child is natural, and most women plan on experiencing pregnancy and childbirth at a certain point in their adult lives. Although conceiving a child may seem like the easiest thing in the world, it is actually not the case for many couples. It is estimated that 10 to 15 percent of all married couples suffer from infertility (Port Elizabeth Infertility and Wellness Clinic, 2004; Wood & Westmore, 1984). Infertility can be described as “the inability to conceive a child or a reduced state of fertility that is caused by various biological factors” (Wood & Westmore, 1984, p.14). Metzger (1998) remarked that the current “infertility epidemic” is the “unforeseen consequences of several socio-economic trends” (p.5), such as reliable contraception, sexually transmitted diseases such as the Human Immunodeficiency Virus (HIV)/ Acquired Immunodeficiency Syndrome (AIDS), the women’s movement, and an economy that pushes women into the labor market during their most fertile years. While the above mentioned factors can be seen to be cultural factors influencing the incidence and prevalence of infertility, it is primarily a medical condition. Far from exclusively being a female concern, fertility is now considered to be a condition that also affects the male as well as the couple as a system rather than placing the responsibility and blame on the female exclusively. Furthermore, infertility treatment has a 25 percent success rate per treatment cycle and therefore it may be required that treatment be repeated several times before a pregnancy occurs, causing infertility treatment to become part of a individual’s and couple’s developmental life cycle (Personal Communication, Dean, 2004).

While the incidence of infertility is increasing, and steady progress is being made in understanding the role that stress and coping plays in aggravating the effects of infertility, the experience of infertility remains firmly rooted in the medical model of cause and effect. While acknowledging that infertility is perceived as a stressful life event, it is also perceived by some to be on par with the experiences of death and divorce (Personal Communication, Dean, 2004; Ferreira, 2005; Leiblum, 1997). It is important to try and understand how individuals make sense of their infertility experiences, how they
subjectively understand and appropriately the situation as well as what helps them to cope constructively with this wide range of experiences and emotions that accompanies this diagnosis (Personal Communication, Dean, 2004; Leiblum, 1997). Thus the focus of the current study is an attempt to understand the psychosocial or psychological strengths of men and women undergoing infertility treatment.

Some research has been done to determine coping processes, and stress and depression levels in couples as well as individuals undergoing infertility treatment. Peterson, Newton and Rosen (2003) researched the impact of agreement between partners’ perceived infertility-related stress and its effects on depression and marital adjustment in infertile men and women. Peterson et al. (2003) concluded that partners who perceived the same level of social infertility stress had higher levels of adjustment. Beutel, Kupfer, Kirchmeyer, Kehde, Kohn, Schroeder-Printzen, Gips, Herrero and Weidner (1999) did a study where they compared treatment-related stresses of couples undergoing in-vitro fertilization (IVF) or intra-cytoplasmic sperm injection (ICSI) treatment to identify gender differences as well as risk factors for depression. They found that women are more distressed by Assisted Reproductive Technology (ART) treatment than men, while men felt more responsible for childlessness which caused a significant reduction in life-satisfaction.

Berghuis (2002) conducted a similar study where he researched coping processes with regard to infertility predicted depressive symptoms in couples which were in an infertility treatment cycle. He concluded that the receipt of negative pregnancy results increased depressive symptoms significantly in a couple. Berghuis also emphasized that the coping strategies that emerge were important predictors of distress in individuals as well as in couples. In other words, according to Berghuis different individuals experience different levels of stress during infertility treatment.

There are a number of unique problems and challenges which these individuals face, and the little research which has been done seems to indicate that infertility treatment has lasting effects on a marital relationship as well as on the individual (Cooper-Hilbert 1998). Individuals reported an increase in psychological strain, depression and marital strain (Cooper-Hilbert 1998). In addition to these findings, Daniluk (2001) did a longitudinal study over a three year period on individuals who had to make the transition
to being biologically childless after medical treatment had failed their condition. During the interviews done on 37 couples at 10 month intervals, beginning within a two month period after they had stopped trying to conceive, the couples shared that little in their lives was left untouched by the experience of infertility and its treatments. They spoke of the pain and humiliation of some of the medical investigations and treatments, and said that “few other experiences in their life had been as difficult to cope with and to come to terms with as their inability to experience the joys of pregnancy” (Daniluk, 2001, p.446).

The deficit in literature and research which deals with the impact which infertility treatment has on males and females undergoing infertility treatment initiated this study, which focuses on the psychofortology of males and females undergoing infertility treatment. In addition, the fact that research which has been done in this area tends to focus on the measurement of the disease and distress of the individuals and couples undergoing infertility treatment, and neglects the psychological strengths that keeps these individuals and couples living a fulfilling life, has contributed to the design of this study which is intentionally broad in its aims and which endeavours to describe and explore the experiences of males and females undergoing infertility treatment.

Male and female patients undergoing fertility treatment cycles respond to direct (e.g., treatment procedures) and indirect stress (e.g., social or financial pressures) concerning their treatment in many different ways and they utilize many different coping mechanisms. Davis and Dearman (1991) conducted research involving 30 infertile women and found that six primary coping responses were observed: (a) distancing from reminders of infertility, (b) instituting measures for regaining control, (c) engaging in actions to increase their self-esteem in other realms, (d) searching for the hidden meaning in infertility, (e) giving in to feelings, and (f) sharing the burden with others. Typically, more women than men tended to seek the advice, support and reassurance of others. Furthermore, Daniluk (1997) found that infertility is linked to a dramatic change in women’s social relationships compared to relatively minor changes in the social relationship of men. As a result, women experiencing infertility often feel a sense of isolation and alienation from female friends and family.

With the advent and explosion of highly technological treatment for overcoming infertility, such as in-vitro fertilization (IVF), gamete intra-fallopian transfer (GIFT), and
other variations of test-tube treatments, infertile couples are faced with numerous treatment choices, many carrying high financial costs and relatively small chances of success (Davajan & Isreal, 1991; Domar, 1997; Monach, 1995). Individuals may also find themselves in the throes of moral, religious and ethical dilemmas as the possibility of carrying donor sperm, egg cells or multiple embryos becomes one of the possible ways of having a child (Stanton & Dunkel-Schetter, 1991).

To be diagnosed with infertility or reproductive related problems is appraised by most individuals as a significantly stressful life event. According to Cooper-Hilbert (1998), most patients experiencing infertility have intense periods of anxiety, depression, helplessness, relationship or marital difficulties and cognitive impairments at some time during the course of their treatment cycles. While some of these difficulties can be overcome as patients learn to adjust, accept and cope with their infertility, the stress induced invariably puts excessive demands on their coping abilities and may play a significant role in their prognosis.

The stressful situations which the participants in this study must react to are largely as a result of the implications of treatment procedures and social pressures. Infertile individuals report experiencing stress from various sources including the treatment itself, its effects on the marital relationship, the financial impact of treatment, jealousy when friends, family or colleagues conceive, interference with work and lack of support from loved ones (Domar, 1997; Ferreira, 2005). According to Rice (1998), stress drains energy and motivation if perceived threat continues over an extended period of time, without an apparent end to the stressful situation. In the case of patients undergoing infertility treatment, severe stress is experienced due to, for example, repeated treatment cycles, failed treatment cycles, socio-economic problems and societal pressure to produce (Daniluk & Tench, 2007; Ferreira, 2005).

In order to cope with these stressors, individuals engage in a variety of ways and strategies to deal with their infertility. These coping strategies utilized seem to influence the degree of stress experienced by the infertile individual (Domar, 1997). Morrow, Thoreson and Penney (1995) investigated the severity of psychological distress in a large sample of infertile men and women. The results of this study confirmed that 10 percent of the women and 15 percent of the men reported clinically significant distress ratings. More
relevant was the finding that of the three ways of dealing with stress, self-blame and avoidance, informational/emotional support seeking, and cognitive restructuring, the use of self-blame and avoidance were most highly correlated with psychological distress.

Modern lifestyles and the way in which we cope with stress have sparked a lot of interest in recent years. This is largely due to the increased pace of the technological world in which we live that has largely been blamed for the increase in stress and stress-related illnesses and disorders. It is with this in mind that the researcher looked at positive psychology as it seeks to understand the different mechanisms and the manners in which individuals cope when faced with a stressor such as infertility.

1.3 Aims of the Study

Although some research has been done on the extent to which infertility increases stress within a family system, very little research has been done to date to determine the psychological well-being of an individual undergoing infertility treatment. It is with this in mind that the aims to explore and describe the coping resources, sense of coherence, satisfaction with life and life happiness of men and women currently undergoing infertility treatment at a privately managed health care unit was chosen. These sub-constructs were decided upon and constitute the construct of psychofortology for the purposes of this study. Psychofortology was for the purposes of this study conceptualized as coping and subjective well-being. Coping was conceptualized as coping resources and sense of coherence and subjective well-being as satisfaction with life and life happiness.

In view of the above the present study’s primary aims were:

1. To explore and describe the coping resources of men and women undergoing infertility treatment.
2. To explore and describe the sense of coherence of men and women undergoing infertility treatment.
3. To explore and describe the satisfaction with life experienced by men and women undergoing infertility treatment.
4. To explore and describe the life happiness of men and women undergoing infertility treatment.
5. To compare the coping resources, sense of coherence, satisfaction with life and life happiness of males and females undergoing infertility treatment.

These four sub-constructs described in the aims constitute the construct of psychofortology for the purposes of this research study. The next section will give a brief outline of the present study.

1.4 Outline of the Study

The current chapter, Chapter 1, introduced the present study and provides the necessary contextual background against which the research was conducted. It also provided the rationale for the study and described the aims of the current study. The second chapter of this document, Chapter 2, provides a description and understanding of infertility in general. Information is provided about the biological aspects of infertility, as well as the social and psychological experiences of infertility. Chapter 3 provides a description of the positive psychology movement and psychofortology, in contrast to the traditional pathogenic paradigm. Chapter 4 of this document gives an overview of the literature, theory and research in the field of stress, coping and coping resources. Coping resources are discussed as a means of mediating the stress response and of promoting wellness. The construct of sense of coherence with specific reference to theory and research that exists is also discussed in Chapter 4. Chapter 5 reviews both theory and research in the area of subjective well-being, with a specific emphasis on satisfaction with life, and the variables that influence satisfaction with life and life happiness. Chapter 6 describes the research design and methodology employed in this study. In order to provide a more comprehensive background of the participants, the sample’s demographic details are also included in this chapter. The results and discussions of this study are presented in Chapter 7. Finally, Chapter 8 reflects concluding remarks on this study’s findings as well as the limitations and value of the study. It also provides suggestions for possible future research areas.
1.5 Conclusion

In this chapter, a brief overview has been given of the positive psychology paradigm and the newly emerging sub-discipline of psychofortology, by outlining the current trends in psychology toward salutogenic and fortigenic conceptualizations in the field of stress management. The need for research regarding stress and coping within patients undergoing infertility treatment was discussed. Specific aims were outlined for the study. These focus on the fortigenic concepts of coping resources, sense of coherence, satisfaction with life and life happiness. In the following chapter, infertility is described and discussed in greater detail.
CHAPTER 2
INFERTILITY

“My infertility is a blow to my self-esteem, a violation of my privacy, an assault on my sexuality, a final exam on my ability to cope, an affront to my sense of justice, a painful reminder that nothing can be taken for granted. My infertility is a break in the continuity of life. It is above all, a wound – to my body, to my psyche, to my soul”

(M.A. Jorgenson in a letter to Resolve, an American infertility magazine).
(Date Unknown).

2.0 Introduction

Fertility and the propagation of name and lineage by means of a biological heir are themes that flood the age-old cultural narratives of history, religion and mythology. The ability to conceive and bear a living child is historically linked to prestige and power, with identity and generativity; while in contrast infertility has been known to be associated with shame, accursedness, disease and defect (Cooper-Hilbert, 1998; Personal Communication, Dean, 2004; Styles, 1990).

The psychological response of men to perceived infertility can be substantial; feelings of personal and sexual inadequacy may result in conflict within the couple, sexual dysfunction, hostility, and guilt (Irvine, 1996). Furthermore, the socially constructed ideal and identity of the woman as a “natural mother” and the “one who nourishes her child with the riches of her body” is thrown into question when faced with the possibility of infertility. Similarly, the symbolic meaning of the pregnant body as that which is “nurturant, natural, and healthy”, provides a cultural ideal. In comparison with this idea infertile men and woman may interpret themselves, their bodies and their identities as being defective and abnormal (Helman, 2001, p.124).

It is with the above mentioned in mind that this study focused on the psychofortology of male and female infertility patients. In Chapter 2, the meaning of the term infertility is defined, discussed and clarified. In addition, this chapter will provide an overview of the normal reproduction of the male and female. Possible aetiologies that can occur within the body will also be explored. Finally, Alternative Reproductive Technology (ART) treatment techniques will be presented and discussed.
2.1 Infertility Defined

The terms “infertility” and “sub-fertility” mean “the inability to conceive or a reduced state of fertility that is caused by various biological factors” (Wood & Westmore, 1984, p.14). Infertility is a current condition – one that prevails at the present moment and prevents the conception of a child (Fullick, 2002). According to Shaban (2006) and Metzger (1998) a couple can be diagnosed as being in a state of infertility if they have been unable to conceive a child after one year of regular unprotected intercourse.

There are various subgroups within the infertile population and they are defined mainly in terms of established or suspected aetiological factors (Letterie, 2005). The subgroups are distinguished as: (a) organic infertility in which a known medical cause can be attributed to the infertility; and (b) inorganic infertility in which there is an absence of identifiable organic pathology (Edelman & Connolly, 1986; Leiblum, 1997).

A further distinction is made between primary and secondary infertility. Primary infertility occurs when a couple has never been able to conceive a pregnancy, while secondary infertility is linked to a couple where at least one partner has been able to conceive at least once prior to the onset of infertility (Beavers, 2004; Whitworth 1996). The present study focuses on the psychofortology of male and female patients undergoing treatment for both primary and secondary infertility.

2.2 Incidence

Fertility problems are very common, affecting one in six couples (Port Elizabeth Infertility and Wellness Clinic, 2004). Metzger (1998) remarked that the current “infertility epidemic” is the “unforeseen consequences of several socio-economic trends” (p.5). This could include reliable contraception, sexually transmitted diseases such as HIV/AIDS, the women’s movement, and an economy that pushes women into the labor market during their most fertile years. While the above mentioned factors can be seen to be cultural factors influencing the incidence and prevalence of infertility, it is primarily a medical condition. Far from exclusively being a female concern, fertility is now considered to be a condition affecting the couple as a system rather than placing the responsibility and blame on an individual within the system (Cooper-Hillbert, 1998).
A healthy couple in their twenties – the time of peak fertility – can take up to two years to conceive a child. A couple in their first month of trying has a one in three chance of conceiving and thereafter it declines rapidly to a one in twenty chance each month. This is not an indication of the persons fertility declining but rather an indication that the statistical likelihood of them conceiving gets less and less as time passes (Whitworth, 1996).

According to Ferring Pharmaceuticals (2002) a third of infertility cases can be related to the male, while another third to the female and the last third to a contribution of factors by both partners. Ferring Pharmaceuticals found that incompatibility between a male’s sperm cells and the female’s genital tract may be a contributing cause of infertility. When no organic or metabolic reason is found for some couples, despite years of effort and trying to conceive, it can be regarded as unexplained infertility. Patients who have been classified as having unexplained infertility are likely to have undiagnosed issues relating to egg quality, such as a maternal age older than 40, increased Follicle Stimulating Hormone (FSH) levels, or immunological issues affecting the ability of the embryo to attach to the uterine lining (Ferring Pharmaceuticals, 2002).

It is estimated that 10 to 15 percent of all married couples suffer from infertility problems (P.E. Infertility and Wellness Clinic, 2004). In the section below normal reproduction for both males and females will firstly be discussed and thereafter the causes and treatment of infertility in both males and females will be highlighted. Lastly, the role that stress plays in infertility will be considered.

2.3 Normal Reproduction

2.3.1 In Males

A fertile male normally produces sperm cells in both testes. Anything that interferes with the production of sperm has an effect on either, or both, the quantity and quality of sperm. According to Saladin (2001), reproduction depends on the ability of sperm to meet and fertilize a female egg and the union of these two sex cells to develop into an embryo, a fetus, and then later a healthy baby. In males sperm is produced all day, every day from puberty until a man is in his late seventies. Sperm functions optimally at a
lower temperature than that of the inner body and therefore they are not within the abdomen but outside it, enclosed in a saclike structure called the scrotum (Family Doctor, 2006).

Sperm begins their life as cells in the testes, about 50,000 of these cells divide every minute and turn into sperm which resembles tadpoles with heads, necks and slender whip-like tails (Saladin, 2001). From the sperm-forming seminiferous (seed-carrying) tubules deep within each testis, the sperm proceeds – after more or less six weeks – to the epididymis. Sperm travel for the next 12 to 14 days through the five-meter-long epididymis which is only one-hundredth of an inch wide and looks like a tightly coiled ball of string. It is here where the sperm acquire their ability to swim (Saladin, 2001). The final preparatory stage the sperm needs to undertake before it leaves the host is the brief transit through the vas deferens. This duct carries them through the prostate gland to the base of the penis. Here they are joined with the prostate and other seminal vesicle fluids which make up the semen (Saladin, 2001). Although less than five percent of ejaculation fluid contains sperm, the rest is accessory gland secretion and water, each ejaculation produces about one and a half teaspoon of semen which contains 100 to 800 million sperm. The process of sperm maturing from cell to ejaculation takes about three months (Saladin, 2001).

According to Cedars (2005) most sperm are killed by acidic vaginal fluid when ejaculated into the woman’s vagina. Approximately one out of every 2000 sperm survive. Those that do survive have to find their way through often hostile cervical mucus into the uterus. Here they begin an uphill battle to reach a recently released egg in one of the fallopian tubes; this can take anything from a few minutes to several hours. When they reach the egg cell they try to penetrate the egg’s outer shell in order to fertilize it.

Although sperm can survive a few days in cervical mucus, eggs cannot however be fertilized beyond 24 hours after ovulation and therefore the period for fertilization is limited (Saladin, 2001). From the process described above it is clear that the timing has to be perfect for a pregnancy to occur. The section that follows explores female reproduction in more depth.
2.3.2 In Females

A female’s reproductive life stretches between menarche, the beginning of menstruation at the age of 12, and menopause at about the age of 45. However, fertility peaks between the ages of 18 and 30 years (Saladin, 2001). A female is born with between 400 000 and two million egg cells or ova. Although these cells are the largest cells in a woman’s body, they are still no bigger than a full stop. The egg cells are stored in the ovaries which are two oblong glands on both sides of the pelvis (Whitworth, 1996). As well as maturing and releasing eggs, the ovaries also secrete the hormones necessary to start and sustain a pregnancy (Saladin, 2001). The fallopian tubes, which stretch from the ovaries to the uterus, are very thin and are lined with thousands of tiny and very delicate hairs which propel the egg and sperm along the tube in opposite directions at the same time (Saladin, 2001). At one end of each tube is the fimbria which flare out and pick up the egg up after it leaves the ovary. The other end leads directly into the uterus, which is where a fertilized egg will embed itself during pregnancy (Saladin, 2001).

A woman has a 28 day cycle. In this cycle the pituitary gland starts releasing large amounts of the two female hormones, Follicle Stimulating Hormone (FSH) and Luteinising Hormone (LH). Follicle Stimulating Hormone serves to stimulate the follicle or fluid-filled sac that contains the egg, while LH serves to mature the follicle sufficiently so that the egg is released out of the follicle during ovulation (Saladin, 2001).

If an egg is not fertilized the lining of the uterus, known as the endometrium, bleeds, breaks down and is then passed out as a menstrual period. If, however, sperm successfully managed to pass through the cervix, and enter the fallopian tube at the right moment to meet the egg, fertilization usually takes place. The embryo then stays in the tube for about three days, reaching the uterus on day three or four and starts to embed into the endometrium on day seven or eight. Implantation is complete by day 14 and this is the beginning of the pregnancy (Saladin, 2001).

According to Saladin (2001), this is an ideal situation where everything goes according to nature’s plan. However, for millions of infertile couples this is only a dream. An egg can encounter many obstacles on its way to the uterus and even when fertilization takes place, the embryo may not successfully implant in the uterus.
According to the authors of the book *Childbirth and Pregnancy* (1986) a number of conditions must be satisfied in order for a woman to conceive a child, namely:

1. Her ovaries must be healthy and active, regularly producing fully ripe eggs. In other words, she must have normal periods.
2. A clear passage way for the egg to travel down and the sperm to travel up must be present via the vagina, through the cervix, to the womb and along the fallopian tubes to the ovaries.
3. The womb must be developed normally, complete with prepared lining, ready to receive the fertilized egg and nourish it.
4. There must be healthy sperm deposited high enough in the vagina to make their way through the cervix to meet and fertilize the egg.

Not only is it necessary for all the reproductive organs to be in working order, but the hormone messengers, which control these organs, must also be working properly. Even if all these physical requirements are met timing is still crucial. If sperm do not arrive within 24 hours before an egg is released or up to 10 hours afterwards, then there is also no chance of a pregnancy (Saladin, 2001). Although being considered in more detail later in this chapter, the section above has considered the female cause for a failed pregnancy. The reader’s attention will now be turned to the male causes for a failed pregnancy. These are discussed in the section that follows.

### 2.4 Causes of Infertility

#### 2.4.1 In Males

According to Downie (1988) and Family Doctor (2006), 49 percent of infertile men have no demonstrable cause of infertility, 13 percent have varicoceles, 11 percent have testicular failure, seven percent have male accessory gland infection, 18 percent have other causes and only two percent of male infertility is due to congenital abnormalities. As mentioned above a fertile male normally produces sperm in both testes and anything that interferes with the production of sperm has an effect on either or both the quantity or quality of sperm. A sperm count, or semen analysis, is the best way to determine whether there is any evidence of infertility problems in a male (Henkel, 2004). This is done by
gathering a semen sample from the particular male masturbating and then ejaculating into a specimen jar. If there are signs of poor quantity or quality sperm cells during the sperm analysis, further investigations are carried out to examine the problem (Winston, 1996).

According to Whitworth (1996) the two main infertility problems males suffer from are: (a) low sperm count or the inability to produce sperm, and (b) sperm may be deformed meaning they are not the right size and shape as well as having poor mobility after ejaculation. Further investigations into the reasons for a male’s infertility include X-rays to detect abnormalities and blockages in the reproductive tract. It can also require a blood sample to check hormone levels. A needle biopsy, in which tissue is removed, can also be done on the testes if the sperm producing cells of the testes need to be examined (Silber, 1991; Wood & Westmore, 1984).

Infertility in males can be due to various reasons, and can include the following:

1. Undescended testes that are not relocated at an early age from the abdomen into the scrotum can cause infertility in 15 percent of all males (Barker, 1990; Silber, 1991).

2. A varicocele, which is a collection of swollen veins around the testes, can cause sperm production and mobility to decrease (Family Doctor, 2006; Whitworth, 1996). This can be treated by tying off the effected vein in a minor operation under general anesthetic. There are three basic theories according to Shaban (2006) and Whitworth (1996) as to why a varicocele is harmful, namely: (a) the testicles are too warm from all the backward-flowing of blood; (b) stagnation of blood in the varicose vein creates poor circulation of oxygen and nutrients to the testicle; and (c) hormones produced higher up in the abdomen by the adrenal gland pass downward into the testicle and suppress sperm production.

3. Autoimmunity can also cause infertility in males. This is a condition where a male’s body attacks his own sperm cells with antibodies, causing them to form a cluster, making it impossible for the sperm to move through their passage to the egg cell (Shaban, 2006; Whitworth, 1996).

4. Several infections such as sexually transmitted diseases, tuberculosis, smallpox and malaria can also affect the sperm producing glands negatively (Georgia Reproductive Specialists, 2006).
5. According to Saladin (2001) viral infections such as mumps can cause infertility in males.

6. The inadequate production of Follicle Stimulating Hormone (FSH) and Luteinising Hormone (LH) can also cause infertility (Shaban, 2006). FSH and LH are secreted by a gland at the base of the brain known as the pituitary gland which is responsible for the production of testosterone. Testosterone in turn is responsible for the production of ‘healthy’ sperm. The inadequate production of these two hormones causes infertility in males.

7. Retrograde ejaculation, where semen is ejaculated backwards into the bladder, can also cause infertility (Whitworth, 1996).

8. A blockage in the tubes like the vas deferens also prevents sperm from entering a female’s body sufficiently to fertilize the egg cells, leading to infertility (Whitworth, 1996).

9. Certain medications may also cause temporary infertility in males (Whitworth, 1996).

10. Environmental factors such as lead poisoning, radiation, and stress can also result in infertility (Whitworth, 1996).

11. Age is also a factor affecting fertility in males, as males may develop sexual disorders such as impotence for example at a more advanced age. (Georgia Reproductive Specialists, 2006; Whitworth, 1996). According to Downie (1988, p.35), where a person lives and works, how much a person eats, drinks and smokes and whether a person is generally happy can all have some affect on fertility. It is unlikely that alcohol or being overweight can be the sole cause of childlessness; however it does reduce sperm production. In general, a healthy lifestyle with little stress facilitates the production of healthy sperm. This also includes avoiding heat and chemicals at work as well as recreational and medical drugs. Fertility is likely to increase if medication is stopped or if a person is removed from the particular environmental hazard that causes the infertility. Like most other male causes of infertility, age does not have any treatable solutions (Downie, 1988; Whitworth, 1996).
12. An inadequate sperm count, as mentioned above, also causes infertility (Downie, 1988).

13. Problems during intercourse, such as a man being unable to deposit sperm into a woman’s cervix as a result of impotence, premature ejaculation or failing to ejaculate can also lead to infertility. These conditions are normally due to surgery, medication and physical or psychological problems. According to Downie (1988) the stress of trying to conceive is also sometimes the cause of the problem. In this regard Downie states the following: “It may occur following the discovery of azoospermia, which is a zero sperm count, or as a result of the demand for sexual performance during an infertility investigation”, such as a post-coital test (1988, p.43). Treatment of these problems includes counseling, surgery to damaged blood vessels and hormones that are injected into the penis to cause an erection or penile implants (Downie, 1988).

14. Stress can cause infertility which in turn causes even more stress, which often prolongs the infertility problem (Domar, 1997).

15. Physical injuries such as severe sports injuries can lead to a man being unable to produce sperm (Silber, 1991).

16. Congenital abnormalities can also account for some of the problems which males struggle with. These congenital problems include the absence of a vas, undeveloped testicles and hypospadias, which is a condition where the urethra opens above or beneath the penis rather than at the end (Downie, 1988).

In the section that follows the female causes of infertility will be elaborated upon.

### 2.4.2 In Females

Infertility in a female can be caused by ovulatory problems, hormonal imbalances or blockage of tubes. Blocked tubes can be related to adhesions, fibroids, endometriosis, fallopian tube damage and an abnormally shaped uterus. According to Metzger (1998) one of the most common causes of female infertility is the failure of the ovaries to release an egg, also known as ovulation failure (Saladin, 2001). Symptoms of ovulation failure include: lack of periods, infrequent periods, frequent periods (every 24 days or less), or
very light periods. Through the measurement of the oestrogen and progesterone hormonal levels it can be determined if ovulation is taking place or not. An imbalance or upset in these hormone levels will cause ovulation failure and therefore a female will not be able to maintain an early pregnancy (Saladin, 2001).

Several ovarian dysfunctions can also lead to infertility. A rare but obvious reason is that both the ovaries are not present, either because the woman was born without them or had them surgically removed, possibly because of cancer. However, it may be possible that ovulation does not take place even if the ovaries are present. This may be due to a traumatic experience or as a result of certain drug treatments causing temporary shutdown of the ovaries (Howles, Jacobs & Shohom, 1998), meaning that the ovaries stop sending hormone producing messages for a specific time. Polycystic ovary syndrome which is part of the vicious circle of hormone imbalance can also be a predictor of ovulation failure (Whitworth 1996). This syndrome according to Whitworth may be inherited, but being overweight can also bring it on. Synthetic hormones in the form of drugs such as clomiphene are used to treat ovulation failure as it stimulates the ovaries to develop several follicles and then release one or more eggs at a time. Another reason for failure to ovulate in females is as a result of a reduced number of eggs in the ovaries and lastly, due to damage to the ovaries as a result of surgery which also leaves a possibility for infertility (Silber, 1991). According to Downie (1988) 70 percent of women fail to ovulate as a result of hormonal problems.

Prolactin is another hormone that is important in fertility. This pituitary hormone is responsible for the stimulation of breast milk production, and if this hormone is present in excessive amounts in non – pregnant woman, it may suppress ovulation (Saladin, 2001). According to Domar (1997) the release of prolactin is triggered by stress, drugs and infection and can be treated with drugs, irradiation or surgery. Other hormones produced by the pituitary gland may fail to stimulate the ripening of an egg within the ovary, or the hormones may fail to stimulate the release of the egg into the fallopian tubes. Luteinising Hormone stimulates the release of the egg and production of progesterone while Follicle Stimulating Hormone triggers the ripening of the egg and the production of oestrogen.

Furthermore, any blockage of the reproductive organs will restrict the passage of egg and sperm cells. The passage for the egg cell can be blocked as a result of a misshaped
uterus, fallopian tube damage or abnormal growths on the lining or wall of the uterus including endometrioses, fibroids and adhesions causing a fertilized egg to pass out with a period and be lost. The most common cause of blocked passages is due to fallopian tube damage. This is caused mainly by trauma in the pelvic region such as surgery or a ruptured appendix, but it may also be caused by inflammation somewhere in the pelvic cavity. The inflammation results in adhesions, which means that one membrane sticks to another, causing a blockage (Garcia, 2005; Howles et al., 1998).

If an ovum is fertilized after ovulation, it stays in the tube for two to three days before passing down into the uterus for implantation. The fallopian tube is more than just a pipeline carrying the ovum from the ovaries to the uterus as it is here that the delicate ovum is nurtured, protected and guided for several days by the cells lining the tubes (Barker, 1990). Because an ovum needs to be nurtured poor nutrition can also induce a spontaneous abortion (Personal Communication, Dean, 2004).

As stated previously, endometriosis can also cause a blockage of the woman’s reproductive tract. Endometriosis occurs when fragments of mucous membrane similar to the womb lining find their way up the reproductive tract and start growing in other parts of the female reproductive tract. These fragments behave in exactly the same way as the womb itself, swelling before a period, bleeding and causing an obstruction. This causes infertility by preventing a passage for the eggs from the ovaries to the tubes. A diagnosis of endometriosis can be made by visual inspection of the pelvis by means of a Laparoscopy (Endometriosis Society of South Africa, 2006; Whitworth, 1996).

A Laparoscopy involves two small incisions. The one incision is made through the belly button and a combination eyepiece and light is passed through the incision allowing the surgeon to see inside the abdomen. The second incision is made along the hairline at the base of the abdomen and a forceps is inserted through the incision allowing the surgeon to move the uterus, tubes or ovaries into view. A dye is then passed through the cervix into the uterus and the tubes allowing for a diagnosis to be made. The misplaced endometrium can generally be treated with either medication or surgery (Endometriosis Society of South Africa, 2006).

Polycystic ovarian disease involves growths in the ovaries and womb called cysts and fibroids and is also common in women. In Polycystic Ovarian Syndrome the follicles
develop each month but do not burst they turn into cysts instead. As a result they distort the organs and stop them from working properly (Silber, 1991; Whitworth, 1996). Fibroids are round growths in the uterus, while adhesions are bands of fibrous tissue in the pelvis that may develop after infection or surgery, causing the sides of the fallopian tubes to stick together preventing the release of the egg from the ovary (Whitworth, 1996).

A damaged cervix, which results in the inability to produce the mucus that aids in sperm transportation (Silber, 1991), as well as autoimmunity can also cause infertility in females (Whitworth, 1996). Sexual activity, abortions, appendicitis and birth infections can damage the tubes (Barker 1990) and thus affect the passage of sperm cells, eggs or the embryo making pregnancy unlikely, if not impossible. According to Whitworth (1996), the greater the stress and infection a woman suffers, the more the egg cells die, thus further depleting the woman’s store of healthy eggs.

Congenital problems are another cause of infertility in women. There are five types of congenital abnormalities related to the uterus that lead to infertility. These include: (a) the absence of a uterus from birth, (b) an abnormally small uterus, (c) a double uterus, (d) a t-shaped uterus, and (e) an asymmetrically developed uterus. These problems can be detected through a physical examination, x-rays or a laparoscopy. Not only can the cervix be problematic but also the cervical mucus found in the cervix. For example, the cervical mucus can fail to make a proper lining and thus prevent the sperm from traveling up the uterine tract or it can contain antibodies that kill the woman’s partner’s sperm. In addition, a damaged or weak cervix can also allow infections into the womb causing a miscarriage (Whitworth, 1996). Finally, according to Domar (1997), stress can upset the fine balance of the hormones needed for conception and embryo implantation. She also states that: “When the body is under extreme physical and emotional stress reproductive organs slow down, and in some cases shut down completely” (p.71).

The treatment of female infertility ranges from simple ovulation induction treatment to correct hormone imbalances, to sophisticated medical procedures such as In-Vitro Fertilization (IVF) or Gamete Intra-Fallopian Tube Transfer (GIFT). Other treatments include: (a) artificial insemination by a donor (AID), where the husband acts as donor most of the time, and (b) corrective surgery to remove fibroids or cysts, or to repair
fallopian tubes or abnormalities of the uterus (Davajan & Isreal, 1991; Domar, 1997; Monach, 1995; P.E. Infertility and Wellness Clinic, 2004).

Finally, unexplained infertility may be due to one of three reasons: (a) there is no problem with the couple, they have just been unlucky so far, (b) there is a problem with the tests used to establish the cause of infertility, which results in the failure to detect any abnormalities, or (c) the problem includes one that has not yet been discovered or identified (Whitworth, 1996). As can be seen from the above discussion, the accurate diagnosis of the cause of infertility in a couple is a crucial step in determining the appropriate therapeutic path that needs to be followed. In the section below the treatment of infertility will be discussed broadly.

2.5 Treatment

Treatment may range from simple education and counseling, to the use of medication to promote ovulation, or highly sophisticated medical procedures such as In-Vitro Fertilization (IVF) or Gamete Intra-Fallopian Tube transfer (GIFT) (Port Elizabeth Infertility and Wellness Clinic, 2004). Conventional medical treatments achieve very good results. However, according to Whitworth (1996), treatment is often lengthy, unpleasant and expensive. The general rule in treating infertility is to start with the simplest, least invasive tests and progress to the more complicated ones.

Fertility is a shared concern, and it is important that both partners are evaluated simultaneously. The very first step to establishing the cause of infertility is for the couple to go for physical examinations, blood tests and semen analysis. During a physical examination of the woman the doctor will feel for cysts, fibroids or damage to any pelvic organs. In the male he will be looking for any trace of lumps or malformation of the reproductive organs (Whitworth, 1996). According to Whitworth (1996) blood tests include the testing of the woman’s oestrogen, progesterone, LH, FSH, prolactin, testosterone and thyroid hormone levels. The male on the other hand is required to masturbate into a small bottle which he then wraps in cotton wool in order to keep it warm and takes it to the laboratory for semen analysis. If the tests deviate from what is considered to be normal, the couple is then referred to a specialist medical practitioner
who may be an urologist or a gynecologist for further treatment, depending on the problem (Whitworth, 1996).

The gynecologist does a post-coital test, ultra scan, hysterosalpingogram (HSG)\(^3\) and laparoscopy on the female. He will also ask her to keep a basal body temperature chart, to ensure that ovulation is taking place (Wood & Westmore, 1984). In conducting a post-coital test, a sample of the woman’s cervical mucus is taken 12 hours after intercourse to see if there is sufficient mucus and if the sperm reacts positively to the mucus. An ultrasound is performed in order to check the ovaries as well as the maturing eggs. According to Whitworth (1996) a HSG is a process where radioactive dye is injected through the cervix into the womb and watched by x-ray as it passes through the tubes. This is used to check the potency of the womb and tubes and is a very painful experience. It also helps the doctor to see whether a couple is actually having sexual intercourse in the correct manner for contraception to take place (Whitworth, 1996). The urologist does a testicular biopsy, a split-ejaculate semen analysis, blood tests as well as a vasography. During a testicular biopsy a piece of tissue is taken from each testicle to check the production of the sperm at the source and to see if there is blockage in any of the vesicular tubes (Whitworth, 1996).

Four basic categories of treatment have been identified and with the help of a medical practitioner or specialist gynecologist the most appropriate type of treatment is established for each couple. The four categories are: (a) hormonal therapy, (b) surgical procedures and microsurgery, (c) artificial insemination, and (d) assisted reproductive technologies. For the purposes of this study assisted reproductive technologies will be discussed in depth and only a brief overview will be given of the other three categories.

In a couple whose infertility is as a result of hormonal imbalances affecting ovulation or sperm production, hormonal therapy is used to replace or enhance the hormonal stimulation necessary for successful conception (Silber, 1991). A variety of surgical procedures are available for fertility problems that are caused by anatomical problems or abnormalities in the reproductive system of both men and women.

\(^3\) Hysterosalpingogram (HCG) is an X-ray procedure that evaluates the passage from the cervix through the uterus and fallopian tubes.
Artificial insemination (AI) is mostly used to treat male related fertility problems, such as low ejaculate volume, low sperm count, or poor sperm motility. It can also be used for other reasons, namely: (a) if sperm is not being placed into the vagina as a result of ejaculation problems, or (b) if a woman has hostile cervical mucus, or (c) if a man has sperm antibodies. Artificial Insemination can also be used for paraplegics where sperm is collected after electro-ejaculation, as well as for men who have a blocked vas or epididymis by removing the sperm from the reproductive tract with a fine needle. This technique is also used to treat problems such as cervical mucus or immunologic problems in females. The woman’s ovulatory patterns are determined by basal body temperature charts, production of cervical mucus, and dilation of the cervix. On day 14 of her cycle artificial insemination is preformed (Cedars, 2005). The woman lies on an examination table while an instrument called a speculum is inserted into her vagina. The speculum extends and eases access to her cervix or the neck of the womb. A syringe containing a quantity of sperm is then inserted, and semen is expressed into the mucus at the entrance of the cervix. Alternatively, the semen may be deposited inside the actual womb by means of a fine tube. The syringe and speculum are removed and the woman rests on her back, pelvis raised for about an hour. The whole procedure is performed in the doctor’s surgery and is relatively simple and painless (Garcia, 2005).

As this study focuses on couples who are undergoing Assisted Reproductive Technologies (ART), this procedure will be discussed in depth. Assisted Reproductive Technologies treatment also known as In-Vitro Fertilization (IVF) or test tube conception requires a more involved, specialized medical procedure that is designed to increase the number of eggs and/or sperm produced, and bring the eggs and sperm together. After infertility has been diagnosed and all the less invasive treatments have been tried with little success, the couple is referred to an IVF or infertility clinic (Silber, 1991; Wood & Westmore, 1984).

The first step is to go for an intake interview at the clinic. Here a doctor and nurse coordinator explains the procedure, the side effects as well as the risks involved (Silber, 1991). The treatment starts with the woman taking a course of medication and self-administered injections of Lupron® to stimulate her ovaries to produce more than the normal one egg (Silber, 1991). This is known as super ovulation. According to Winston

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(1996) the ovaries can be over stimulated and in rare instances this has been known to be lethal. The woman then gives the clinic daily blood or urine samples to determine her hormone levels, followed by an ultrasound to see whether her ovaries are responding correctly to the treatment. Through these procedures the doctors are able to estimate when she will ovulate and when an egg escapes from its follicle - this occurs when the follicle swells so much that it bursts. Just before ovulation, about eight to 12 days after she started the drug treatment, the eggs are aspirated, or sucked, from the ovaries, in what is known as an egg collection (Winston, 1996).

The egg collection is done in an operating room by a gynecologist with a nurse, a laboratory technician and an anesthetist, using either a laparoscope or ultrasound (Silber, 1991). The laparoscope is inserted through the belly-button and a smaller hole is made for a pair of thin forceps, used to move the ovaries into position and hold them steady. A third incision is then made for a hollow needle, through which the eggs are sucked. Egg collection can take between 20 and 60 minutes. Each egg is washed after collection in a culture that removes the follicular fluid and red blood cells. The eggs are then placed into a test-tube or a flat culture dish, together with the culture. The eggs are then placed in a laboratory incubator that is kept at body temperature for six to 18 hours. After this the eggs are ready to be mixed with sperm in a process known as insemination. About two hours before insemination, semen is collected from the husband. The sperm is then checked for motility and counted. The best 10 000 and 100 000 sperms are then added to each egg in the test-tubes and the test-tubes are returned to the incubator (Fullick, 2002). Normally 10 eggs are fertilized and five to six of them develop into embryos. The embryos are removed from the culture and washed in a fresh culture. Not more than three to four of these embryos are gently sucked into an ultra thin catheter which is then passed through the woman’s vagina into the uterus. This procedure takes place in an outpatient room near the laboratory. The woman will then be told to ‘take it easy’ for a few days and avoid sex for the next two weeks. After two weeks she then returns to the clinic to take a blood test to see if the IVF was successful and if she is pregnant (Fullick, 2002; Silber, 1991).
According to Winston (1987) IVF is not suitable for everyone that is infertile. Since IVF is merely a procedure that bypasses the fallopian tubes, you have to have a more or less normal ovary and uterus for IVF treatment to be successful.

The main reasons, according to Winston (1987), for utilizing IVF treatment include the following:

1. When surgery to correct tubal disease has been unsuccessful;
2. When tubes are severely damaged and IVF has a better chance of success than tubal surgery;
3. When tubes are blocked or twisted;
4. When both tubes are damaged and the husband has a low sperm count;
5. When the cervix prevents the sperm from reaching the right place and other treatments have failed;
6. For couples who have two or more causes of infertility; and
7. For some women with endometriosis.

According to Winston (1996) one of the most distressing and common situations is that, having sailed right through all the stages of IVF, including having had perfectly healthy embryos transferred, vaginal bleeding starts about six to 10 days later. It is estimated that a single IVF cycle, using a woman’s own eggs, has a 15 percent chance on average of resulting in a live baby (Winston, 1996).

Gamete Intra-Fallopian Tube transfer (GIFT), is a very similar technique to IVF and is an alternative to IVF. The main difference however, according to Winston (1987, p.163), is that during GIFT no attempt is made to produce an embryo outside the body. The eggs and sperm are simply mixed together in a drop of fluid and placed back into the fallopian tubes immediately (Fullick, 2002). According to Fullick the idea is that fertilization will take place within the natural environment of the body instead of in a glass dish. Any embryos that form will then travel down the remaining part of the fallopian tube to the uterus where they will implant in a normal manner.

Intra Cytoplasmic Sperm Injection (ICSI) is a procedure where eggs are harvested from a woman after treatment with fertility drugs in the same way as for IVF. A single sperm is then injected into the cytoplasm of each egg cell. The fertilized eggs are then observed as they divide to form early embryos. Two or three of these healthy embryos
will then be returned to the body of the mother just as in normal IVF treatment (Fullick, 2002).

Natural therapies that have proven to be successful in the treatment of infertility include: (a) physical therapies such as aromatherapy, herbal medicine, homeopathy, massage, naturopathy, nutritional therapy and osteopathy; (b) emotional and mental therapies such as flower remedies, counseling, hypnotherapy and meditation; and (c) energy therapies such as acupuncture, craniosacral therapy, reflexology and yoga have all proven to be successful (Whitworth, 1996).

One should bear in mind that the chance for a fertile couple to conceive is 25 percent on average during each menstrual cycle. Comparable to normal fertility rates, effective treatments can be expected to have up to 25 percent success rate per treatment cycle, and may therefore have to be repeated several times before a pregnancy is achieved (Personal Communication, Dean, 2004). It is evident from the above discussion that infertility is not only very complex, but may produce significant amounts of stress within an individual. Therefore stress and how it relates to infertility will be discussed in the section that follows.

2.6 Stress and Infertility

During personal communication with Dean (2004), she stated that infertility treatment has a 25 percent success rate per treatment cycle, meaning that it often has to be repeated several times before a pregnancy occurs, causing infertility to become part of a couple’s life cycle (Cooper-Hillbert, 1998). Infertile couples report experiencing stress from various sources including (a) the treatment itself, (b) effects on the marital relationship, (c) the financial impact of treatment, (d) jealousy when friends, family or colleagues conceive, (e) interference with work, and (f) lack of support from loved ones (Domar, 1997; Ferreira, 2005).

With the advent and explosion of highly technological treatment for overcoming infertility, such as In-Vitro Fertilization (IVF), Gamete Intra-Fallopian Transfer (GIFT), and other variations of test-tube treatments, infertile couples are faced with numerous treatment choices, many carrying high financial costs and relatively small chances of success (Davajan & Isreal, 1991; Domar, 1997; Monach, 1995). Couples may also find
themselves in the throes of moral, religious and ethical dilemmas as the possibility of carrying donor sperm, egg cells or multiple embryos becomes one of the possible ways of having a child (Stanton & Dunkel-Schetter, 1991).

In order to cope with these stressors, couples engage in a variety of ways and strategies to deal with their infertility. These coping strategies utilized seem to influence the degree of stress experienced by the infertile individual (Domar, 1997). Morrow, Thoreson and Penney (1995) investigated the severity of psychological distress in a large sample of infertile men and women. The results of this study confirmed that 10 percent of the women and 15 percent of the men reported clinically significant distress ratings. More relevant was the finding that of the three ways of dealing with stress, self-blame and avoidance, informational/emotional support seeking, and cognitive restructuring, the use of self-blame and avoidance were most highly correlated with psychological distress.

Beutel, Kupfer, Kirchmeyer, Kehde, Kohn, Schroeder-Printzen, Gips, Herrero and Weidner (1999) did a study where they compared treatment-related stresses of couples undergoing In-Vitro Fertilization (IVF) or Intra-Cytoplasmic Sperm Injection (ICSI) treatment to identify sex differences as well as risk factors for depression. They found that women were more distressed by Assisted Reproductive Technology (ART) treatment than men, while men felt more responsible for the childlessness resulting in a significant reduction in life-satisfaction.

Davis and Dearman (1991) conducted research involving 30 infertile women and found that six primary coping responses were observed: (a) distancing from reminders of infertility, (b) instituting measures for regaining control, (c) engaging in actions to increase their self-esteem in other realms, (d) searching for the hidden meaning in infertility, (e) giving in to feelings, and (f) sharing the burden with others. Typically, more women than men tend to seek the advice, support and reassurance of others. Furthermore, Daniluk (1997) found that infertility is linked to a dramatic change in women’s social relationships compared to relatively minor changes in the social relationship of men. As a result, women experiencing infertility often feel a sense of isolation and alienation from female friends and family.

While the incidence of infertility is increasing and steady progress is being made in understanding the role that stress and coping plays in aggravating the effects of infertility,
the experience of infertility remains firmly rooted in the medical model of cause and effect (Leiblum, 1997). While acknowledging that infertility is perceived as a stressful life event, it is also perceived by some to be on par with the experiences of death and divorce as illustrated graphically in Figure 2.1 (p.32) which highlights the emotional stages of infertility (Personal Communication, Dean, 2004; Leiblum, 1997). Ferreira (2005) found that infertility is a stressful event and is experienced very similarly to Kubler-Ross’s grieving stages that are associated with feelings related to that of experiencing death and divorce. It is important to try and understand how individuals make sense of their infertility experiences, how they subjectively understand and appropriate the situation as well as what helps them to cope constructively with this wide range of experiences and emotions (Personal Communication, Dean, 2004; Leiblum, 1997). The focus of this study is an attempt to understand the psychofortological experience of men and women undergoing infertility treatment in the context of the paradigm of positive psychology.
Figure 1:

EMOTIONAL STAGES ASSOCIATED WITH INFERTILITY

INFERTILITY → CRISIS

DEVELOPMENTAL CRISIS → EMOTIONAL CRISES

EMOTIONS ASSOCIATED

SHOCK OR DENIAL ANXIETY ANGER / FRUSTRATION LOSS OF CONTROL ISOLATION BLAME / GUILT UNWORTHINESS (SELF-CONCEPTS) DEPRESSION GRIEF ACCEPTANCE / RESOLUTION

Multiple losses

a. Loss of health
b. Loss of relationship

c. Loss of self-confidence
   (control)
d. Loss of security
e. Loss of self-esteem
f. Loss of status / prestige
g. Loss of fantasy

(Source: adapted from Cooper-Hilbert, B. 1998; Personal Communication, Dean, L. 2004; Styles, F. 1990, pp.33 - 44)
2.7 Conclusion

In this chapter the theory of the causes of infertility and the way they can be overcome was discussed. As mentioned before in this chapter high-tech treatments like IVF, GIFT and ART make the whole process of an infertility treatment cycle sound very neat, orderly and scientific. However, when science meets the real world all of the neatness gets lost. Infertility involves real individuals and treatment can be messy, unpredictable, take a long time and even be unsuccessful. As discussed earlier in this chapter few studies have been conducted exploring the emotional experiences of couples and individuals undergoing infertility treatment. More specifically these studies explored distress individuals experience while undergoing treatment. However, this chapter highlighted the growing need for research on what makes these individuals thrive and cope during this extremely unpredictable and sometimes painful experience.

Furthermore this chapter explored the incidence of infertility, normal reproduction in healthy individuals as well as possible treatment methods that can be utilized to correct any abnormalities detected by the infertility specialist. As this study focused on the participants’ well-being and ability to constructively cope with stress rather than measuring stress levels in infertility patients, stress and infertility treatment was briefly explored in the last section of this chapter in order to put the current study in greater context. The following chapter discusses the salutogenic end of the stress continuum, more specifically the development, concept and theory of positive psychology and psychofortology.
CHAPTER 3
POSITIVE PSYCHOLOGY AND PSYCHOFORTOLOGY

“Although the world is full of suffering, it is also full of the overcoming of it”
(Helen Keller, 1904, p.7).

3.0 Introduction

The focus of this study is to explore and describe the coping resources, sense of coherence, satisfaction with life and life happiness of male and female infertility patients receiving outpatient treatment at a privately managed health care hospital. Before the theoretical constructs of coping resources, sense of coherence, satisfaction with life and life happiness can be discussed a brief overview of the positive psychology movement and the salutogenic paradigm, from which these constructs were born, will be given in this chapter. In seeking to investigate these theoretical concepts, the present study will be fortigenic in orientation, as it focuses on the psychological strengths, capacities and resources of individuals as opposed to the traditional pathogenic paradigm of illness.

3.1 Towards Defining Positive Psychology

At an American Psychology Association conference in 1998, Martin Seligman, the then president of the association, reminded those present that the forgotten mission of psychology was to build human strength and to nurture genius (Compton, 2005). Martin Seligman, one of the founders of the positive psychology movement, indicated that positive psychology was born out of the realisation that “psychology is not just the study of pathology, weakness, and damage”, but also the study of “strength and virtue” (Seligman & Csikszentmihalyi, 2000, p.7). According to Sheldon and King (2001) in the American Psychologist positive psychology revisits “the average person” with an interest in finding out what works, what is right, and what is improving. Positive psychology asks, “What is the nature of the effective human being, who successfully applies evolved adaptations and learned skills? And how can psychologists explain the fact that, despite
all the difficulties, the majority of people manage to live lives of dignity and purpose?” (Sheldon & King in American Psychologist, 2001, p.216).

Positive psychology attempts to urge psychologists and researchers to adopt a more open and appreciative perspective regarding human potential, motives, and capacities (Sheldon & King, 2001). Such an endeavour is surprisingly difficult within psychology’s reductionist epistemological traditions, which train behavioural scientists to view positivity with suspicion, as a product of wishful thinking, denial, or “hucksterism” (Sheldon & King, 2001, p.216). Before World War II, psychology had three distinct missions: (a) to cure mental illness, (b) making the lives of all people more productive and fulfilling, and (c) identifying and nurturing high talent. During this time the empirical focus of psychology shifted to the assessment and cure of individual suffering. Practitioners went about treating the mental illnesses of patients within a disease framework, by repairing damage. This approach to treatment brought about many benefits. The downside, however, was that the two fundamental missions of psychology: (a) to make the lives of all people better, and (b) to nurture genius was all but forgotten (Seligman & Csikszentmihalyi, 2000).

Seligman (2002; 2003) described post-World War II as a time that saw the field of positive psychology aligning itself very strongly with the science of healing, and by implication, the science of repairing that which is damaged or diseased (King, 2003). This emphasis was on the pathological objectified; it defined the human being as a passive, helpless creature at the mercy of the various internal drives and external stimuli. It has become increasingly clearer through research that normal functioning of human beings cannot be explained from a purely negative frame of reference as it excluded and discounted the possibility that a human being could maintain a sense of integrity despite severe suffering and possess various qualities such as courage, future mindedness, optimism and faith which act as a protective barrier against mental illness (Seligman & Csikszentmihalyi, 2000). Meichenbaum (1994) further noted that people seem to draw on an inner strength, endurance and a degree of resiliency to survive painful experiences that result from either physical or psychological trauma. According to Abi-Hashem (2001) it is these qualities of inner strength that are too easily overlooked and overshadowed by agony, despair and defeat. While research has led to a greater understanding of how
people survive in conditions of adversity (Benjamin, 1992; Koch and Leary, 1985; Smith, 1997), the exclusive focus on pathology has resulted in psychologists having very little knowledge of what makes life worth living or about how people flourish under benign and ordinary conditions (Seligman & Csikszentmihalyi, 2000).

Seligman and Csikszentmihalyi (2000) suggested that the main aim of positive psychology is to “begin to catalyse a change in the focus of psychology from preoccupation only with repairing the worst things in life to also building positive qualities” (p.5). It is an attempt to encourage psychologists and researchers to adopt a more open and appreciative perspective regarding human potential, motives and capacities (Seligman & Csikszentmihalyi, 2000; Sheldon & King, 2001). The mission of positive psychology according to Seligman and Csikszentmihalyi (2000) is to understand and foster the factors that allow individuals, communities, and societies to flourish. According to Lazarus (2000), the new field of research in positive psychology can guide psychologists towards understanding how positive affect or emotion might help to prevent emotional breakdown under severe and prolonged periods of stress.

While the fundamental ideas underpinning positive psychology have been around since time immemorial, the development of these ideas into theories about health, positive psychological and social functioning is a relatively new endeavour (Strümpher, 2001). Three basic assumptions stem from the emerging paradigm of positive psychology. The first assumption, although not unique to the paradigm, is of central importance: those stressors, adversity and other inordinate demands are inherent to the human condition. The second assumption is that, despite these stressors and adversity, there are also strengths through which this condition can be endured and even transcended. Saleebey (1997) termed this the “strengths perspective”. From this flows a third assumption: that physical, emotional and social trials and tribulations can, for many, be propitious-stimulating continuous growth and strengthening, as products of the discovery of capacities, insights and even virtues (Strümpher, 2001).

According to Seligman and Csikszentmihalyi (2000), the field of positive psychology at the subjective level is about valued subjective experiences: well-being, contentment, and satisfaction (in the past); hope and optimism (for the future); as well as flow and happiness (in the present). Furthermore it is said to be about positive individual traits
such as: the capacity to love, vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality, future mindedness, spirituality, high talent and wisdom (Seligman & Csikszentmihalyi, 2000).

Antonovsky’s (1979) underlying theory was: “Given the ubiquity of pathogens – microbiological, chemical, physical, psychological, social, and cultural – it seems to me self-evident that everyone should succumb to this bombardment and constantly be dying” (McLeod, 2004, p.13). Because this is clearly not true, Antonovsky searched to unravel ‘the mystery of health’ and to find the question of ‘how people manage stress and stay well’ (Antonovsky, 1987). It is with this in mind that Antonovsky (1979; 1988; 1994), introduced the construct of salutogenesis, from Latin: salus (= health) and Greek genesis (= origins), into the emerging field of positive psychology. Salutogenesis has been used as an alternative orientation that facilitates a greater understanding of health rather than illness and therefore the term salutogenesis is concerned with the origins of health and wellness. A core assumption of this paradigm is “of heterostasis, disorder, and pressure toward increasing entropy” of the living organism (Antonovsky, 1988, p.2). The question of how individuals manage with stress originated after Antonovsky’s conclusion that stressors are always present in human existence, and that the “human condition is stressful” (p.10). Later, it came to the fore that individuals gain strength from their inner resources to cope with continuous challenges and this led to what was termed generalised resistance resources (GRRs) (Antonovsky, 1996). Generalised resistance resources can be described as the main characteristics of a person, a group, a subculture or society that facilitates the avoidance or combat of a range of stressors (Strümpher, 1995).

Strümpher (1995) proposed the construct of fortigenesis which is a more holistic concept than that of salutogenesis. The term ‘fortigenesis’ comes from Latin: fortis (= strong) and aims to focus on the strengths of an individual at a variety of endpoints (Strümpher, 2005). A new sub-discipline, psychofortology, was further suggested by Wissing and Van Eeden (1997). The term psychofortology implies that “not only the origins of psychological well-being should be studied, but also the nature, manifestations, and consequently ways to enhance psychological well-being and develop human capacities” (1997, p.5). Seligman and Csikszentmihalyi (2000) described this as
“a science of human strength” and “a perspective focused on systematically building competency” (p.7).

Pretorius (1997) further added to the field of psychological well-being by introducing the construct of fortitude as an indication of “the strength to manage stress and stay well” (p.174). This strength is derived from an “appraisal of the self, the family and support from others” (Pretorius, 1997, p.174). It is believed that understanding the resources some individuals utilize to find the strengths to overcome pressures will lead to increase the number of individuals who find it difficult to be resilient against stressors (Strümpfer, 1995).

Keyes (2005) recently raised the question about the possibility of two continua, one representing mental/psychological ill-health and one representing mental/psychological wellness. In the area of mental illness, a range of measuring instruments and the Diagnostic and Statistical Manual (DSM) allowed empirical anchoring and order. The same is only beginning to occur on the mental health side, in the form of the Values in Action Classification (Peterson & Seligman, 2004) which however runs the danger of setting a standard and moral, ethical or religious view of the best way to live (Grayling, 2004) instead of a psychological view of how to live best. An alternative to this idea is Keyes’s (2002; 2005) development of a mental health continuum.

Keyes (2002) hypothesized complete mental health to be a bipolar continuum that ranges from flourishing, in which an individual experiences high levels of positive emotion and functions well both psychologically and socially, to languishing, which is “conceived of as emptiness and stagnation, constituting a life of quiet despair” (p.21) where an individual might describe their lives as ‘hollow’, ‘empty’, and ‘void’. In terms of Keyes’s (2005) continua, fortigenesis can be described as a construct that refers to factors that places an individual along a continuum. It can also be seen as a process which, depending on subjective and external conditions, waxes and wanes and thereby moves an individual between the two poles of the continua: from pure forms of mental illness down to complete absence of such illness, from languishing up to pure flourishing. In the process of the move towards the flourishing pole of the continuum fortigenic processes could wax as a result of positive, eustress experiences, such as: “continuing education, self-directed work experiences, participation in socially valued decision
making, a rejuvenating love relationship, the joys of parenthood, or psychotherapy; religious conversion and participation could also play a role” (Strümpher, 2005, p.4). On the other hand the downward move along this continuum in the direction of languishing, fortigenic processes could wane as a result of distressing experiences, for example, serious illness or injury, bereavement, untoward work experiences without any escape, retrenchment or unemployment, social isolation, political upheaval or war. According to Strümpher (2005) there is interaction between the external circumstances or environment and the personality make-up of the individual in any movement along the languishing-flourishing continuum.

In the following section the researcher discusses some of the constructs that are related to positive psychology.

3.2 Constructs Related to Positive Psychology

Roe (1950; 1953) made one of the biggest contributions to the field of psychofortology when she studied scientists that were selected as the most outstanding contributors to their particular fields. These scientists were well adjusted both socially and in their marriages despite appalling childhood histories, in some cases, and indications of severe disturbance on projective tests. Roe (1950; 1953) found that teachers who encouraged intellectual independence, development in a career and support derived from the wife, were all important in “encapsulating” (1950, p.338) the difficulties.

Constructs related to psychofortology dates back as early as 1955 when Super made a clear distinction between hygiology and psychopathology (Strümpher, 1990). Super viewed hygiology as the concern of counselling psychology, that opposes traditional clinical psychology which concerns itself with psychopathology. Hygiology refers to “the normalities even of abnormal human beings, with locating and developing personal and social resources and adaptive tendencies so that the individual can be assisted in making more effective use of them” (Super, 1955, p.5). Other personality theorists raised similar ideas, such as Maslow (1954; 1973) with his emphasis on the need for self-actualization and humanistic psychology, and Rogers (1951) with concepts of the actualizing tendency.
and the fully functioning personality. The essence of strength is inherent in a number of other early constructs, some of these constructs are mentioned in Table 1 below.

Table 1

Constructs Related to Positive Psychology

<table>
<thead>
<tr>
<th>Concept</th>
<th>Researcher</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardiness</td>
<td>Kobasa (1982)</td>
<td>Hardiness is a personality style which refers to a cluster of traits possessed by those individuals best able to cope with stress. It constitutes three components, namely: (a) a liking of challenge (comprehensibility), (b) a sense of commitment (meaningfulness), and (c) a sense of control (manageability).</td>
</tr>
<tr>
<td>Dispositional Optimism</td>
<td>Scheier and Carver (1987)</td>
<td>Dispositional Optimism refers to a generalized expectancy of favourable outcomes, or an inclination to believe that good rather than bad things will happen to us.</td>
</tr>
<tr>
<td>Subjective Vitality</td>
<td>Ryan and Frederickson</td>
<td>Subjective Vitality can be described as a specific, continuous, subjective experience of possessing energy, enthusiasm and aliveness which is considered to be a reflection of both organismic and psychological wellness.</td>
</tr>
<tr>
<td></td>
<td>(1997)</td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Bandura (1989)</td>
<td>Self-efficacy is a coping style whereby a person, when confronted by a situation that is threatening or induces tension, believes that they have the ability to behave in the way required for a desired outcome.</td>
</tr>
<tr>
<td>Learned Optimism</td>
<td>Seligman (1991)</td>
<td>Learned Optimism is a coping style and a personality pattern whereby the individual ascribes events to internal, permanent, and pervasive factors. Negative events are ascribed to factors that are external and temporary.</td>
</tr>
</tbody>
</table>
Furthermore, Strümpfer (1990) identified six constructs to conceptualise aspects of psychological wellbeing and processes involved in coping and enhancement of wellness. Strümpfer’s (1990) aim was to describe the core of salutogenic and fortigenic functioning, namely the sense of coherence, locus of control, self-efficacy, hardiness, potency, and learned resourcefulness. Some of these constructs that are relevant to the purposes of this study will be explained in later chapters.

The concept of positive psychology has infused an interest in the psychology of human strength (Linley & Harrington, 2005). Science and practice that rely on this view may directly prevent many of the major emotional disorders. A major development of positive psychology thus far has been the development of the Character Strengths and Values (CVS), classification of strengths (Peterson & Seligman, 2004) which attempts to provide an understanding of human strengths at a meta-level of analysis (Linley & Harrington, 2005). This approach also re-directed psychology to its two ‘forgotten’ missions which is to make normal people stronger and more productive as well as to actualise high potential within individuals (Seligman & Csikszentmihalyi, 2000). According to McLafferty and Kirylo (2001) there exists a great need to further develop the psychology of survivorship, resiliency, encouragement, and strength. Lazarus (2000) suggested that this new field of research can guide psychologists towards an understanding of how positive affect or emotion might help to prevent emotional breakdown under severe or prolonged stress. The present study incorporates the principles of the positive psychology movement by focusing on the strengths, resources and capacities of male and female patients undergoing infertility treatment. The following subsection of this chapter outlines research regarding the positive outcomes of stress.

3.3 Positive Affect Co-occurs with Distress

The literature is giving increased recognition to the possibility that stressful life events and trauma may provoke positive psychological changes (Affleck & Tennen, 1996; Schaefer & Moos, 1992; Tedeschi & Calhoun, 1995). This increased field of research has noted that exposure to trauma and other stressful life events do not inevitably cause depression and despair. Such stressful experiences can act as catalysts for re-evaluating one’s goals and priorities and for re-establishing a greater sense of self (Schaefer &
Moos, 1992). According to Park, Cohen and Murch (1996), in addition to negative or pathological outcomes, there are also positive outcomes of stressful life events.

Researchers and theorists have begun to explore a range of novel concepts including, stress-related growth (Park et al., 1996), positive personal changes (Curbow, Somerfield, Baker, Wingard, & Legro, 1993), meaning-making (Park & Folkman, 1997), meaning-based coping (Folkman & Moskowitz, 2000), benefit-finding (Tennen & Affleck, 1999), benefit appraisals (Lazarus, 1999), and growth-orientated functioning as well as crisis growth (Holahan, Moos & Schaefer, 1996). Increasing evidence indicates that the array of positive outcomes that may result from stressful events includes: finding meaning in life, developing better coping skills, enhancing one’s social resources, establishing important personal priorities and recognizing the value of social relationships (Leedham, Meyerowitz, Muirhead & Frist, 1995; Shifren, 1996). Interestingly, these research results are congruent with the fundamental principles of the positive psychology movement, and represent a useful alternative to the prevailing focus on pathology and deficits.

Masten (2001) wrote “Resilience (also fortigenesis) appears to be a common phenomenon that results in most cases from the operation of basic human adaptational systems…from the everyday magic of ordinary, normative human resources” (pp.227 – 235). After concluding a study of survivors of the Holocaust, Helmreich (1992) reported:

The survivors were not supermen; they were ordinary individuals before the war, chosen by sheer accident of history to bear witness to one of its most awful periods…It is not a story of remarkable people. It is a story of just how remarkable people can be (p.276).

It is with this quote in mind that the emphasis of this study is therefore on male and female infertility patients’ well-being and resilience to stress, rather than the measurement of stress per se. These results also apply to chronic illness such as infertility, where empirical evidence showed that positive affect also occurs during chronic stress, often with surprising frequency. In a study done by Viney (1986), it was found that patients that were hospitalized with a severe or chronic illness reported significantly higher levels of positive emotion than did participants in a non-patient comparative group.
Folkman and Moskowitz (2000) suggested that one of the major deficits in research and theory on the coping processes of individuals has been the almost exclusive focus on negative outcomes in the stress process. These two authors highlighted the following points from their research: (a) that positive affect can co-occur with distress during a given period, (b) that in the context of stress, positive affect can influence coping and stress reactions, and conversely, that coping can generate positive affect, and (c) that in the context of chronic stress, coping processes that generate and sustain positive affect involve meaning.

The new direction in which research on stress and coping is developing is clearly salutogenic in origin and supports the theory and conclusions of Antonovsky’s life’s work. In the following two subsections of this chapter the pathogenic paradigm and the salutogenic paradigm, which evolved from within the research of the positive psychology paradigm is discussed.

3.4 The Pathogenic Paradigm

In the past, the field of psychology firmly aligned itself with the pathogenic orientation of the Western medical model. The pathogenic orientation is generally directed towards finding out why people fall ill and why they may develop a particular disease. This orientation leads researchers, practitioners and policy makers to concentrate on the specific disease diagnosis, or on the prevention of specific diseases, particularly among high-risk individuals or groups (Antonovsky, 1987; 1996; Barnard, 1994; Strümpfer, 1993; 2001; Wissing & Van Eeden, 1997; Witmer & Sweeney, 1992). This kind of worldview has its origin in a Western culture that is “obsessed with, and fascinated by, psychopathology, victimology, abnormality, and moral and interpersonal aberrations” (Saleeby, 1997, p.4). The pathogenic paradigm is built on the fundamental assumption that the normal state of affairs of the human being is one of homeostasis and order (Canon, 1939). This implies that the normal state of the human organism is a relatively constant condition, which may vary somewhat but is maintained by various complex interacting regulatory mechanisms. This constant condition of homeostasis may be disrupted by pathogens and stressors and, if the regulatory mechanisms do not function properly, disease sets in (Canon, 1939).
This homeostasis according to Antonovsky (1994) can furthermore be occasionally disrupted by external factors such as microbiology, physical-, chemical-, or psychosocial stressors, vectors, or agents. More recently, the emphasis has been on multi-factorial causes of illness, usually in terms of risk factors. For example, the infertile prone personality has been advanced as a psychosocial risk factor for being diagnosed with infertility, along with other medical risk factors like exposure to chemicals, prolonged use of birth control, radiation and hereditary genes (Georgia Reproductive Specialists, 2006; Whitworth, 1996). Homeostasis in any organism according to Saladin (2001) can be restored by regulatory mechanisms such as neuropsychological, immunological and endocrinological systems. Disease is normally the result of inadequate or faulty mechanisms. Antonovsky (1994) suggested that therapy then seeks to reinforce, enhance, or replace the faulty regulatory mechanisms.

The six consequences according to Antonovsky (1994) of this paradigm of thinking, research, and action include:

1. Dichotomous thinking about people, classifying them as either healthy or diseased.
2. Thinking pathogenically, making our focus of concern a specific pathological entity: heart disease, or cancer, or schizophrenia. Even professionals aiming at prevention are channelled intellectually and institutionally into the prevention of disease X, Y, and Z.
3. The pathogenic paradigm has constrained us to search for the cause and multi-factorial causation of disease X. In other words, the prime focus of attention is given to the pathogens that causes disease X for example, and not to the generalized capacity of the human being to cope with the pathogens.
4. Wide spread stress research, which is a central concern in behavioural health, within the pathogenic paradigm has led us to assume that stressors are naturally negative.
5. The pathogenic paradigm underlies the ambience of Dubos (1960) who has warned against, ‘the mirage of health’. Wars against disease X, Y and Z are mounted. Scientists that are concerned with the ‘magic bullet’, according to Antonovsky (1994), are not attracted to the pleasantries of what behavioural scientists have to offer. Furthermore, these scientists control the resources and project the general image that it is they that have pulled off the miracles. It is this that causes us to move closer and closer to utopia.

6. Lastly, the pathogenic orientation has given overwhelming priority to considering prevention to the high-risk group. Antonovsky (1994) suggested that the pathogenic paradigm tends to ignore what methodologists call deviant cases. For example, we do not ask questions about the Type A’s who do not have coronaries, the smokers who do not get lung cancer or the infertility patients who seems to be coping. In other words and much more important, we do not study ‘the symptoms of wellness’ (Brown, 1981).

The pathogenic paradigm is generally directed at finding out why people fall ill and why they are prone to developing a particular disease. According to Witmer and Sweeney (1992), primary attention has been given to ‘sickness’ and ‘dysfunction’ and resources have been exclusively committed to remediating problems. This trend is confirmed when looking at the large amounts of research available on stress and health. It is not difficult to find examples to illustrate the deficit thinking of the pathogenic paradigm where, with a shift of perspective, it would also be possible to have a “strength view” of the same situation (Strümpfer, 2001, p.3). In the following section of this chapter the positive psychology or salutogenic paradigm will be discussed.

3.5 The Salutogenic Paradigm

Compared to the vast amount of research on mental illness, relatively little theorizing and research have gone into positive mental health (Strümpfer, 2005). While the pathogenic paradigm produced valuable insight into the causes of illness as well as the prevention of these illnesses, the exclusive emphasis on the nature of disease ignored other relevant, creative and insightful conclusions about the nature of health. The pathogenic paradigm resulted in a model of the human-being lacking in positive features
that makes life worth living, causing psychologists to have limited knowledge of what makes life worth living. It was with this in mind that Seligman and Csikszentmihalyi (2000) proposed that the aim of positive psychology is “to begin to catalyze a change in the focus of psychology from preoccupation only with repairing the worst things in life to also building positive qualities” (p.5).

The salutogenic paradigm movement makes a radically different, appreciative set of assumptions and attributions about health, motivation, capacities, potential, and social functioning. According to Seligman and Csikszentmihalyi (2000, p.6) the traditional psychology of “victimology” is turning into a “science of strength”, a psychology of “survivorship, resiliency, encouragement, and strength” (Abi-Hashem, 2001, p.86).

The salutogenic paradigm according to Antonovsky (1994) suggests that the normal state of affairs of the human organism is one of entropy, disorder, and of the disruption of homeostasis. When thinking in a salutogenic manner the total population becomes the focus of concern, since we work on a continuum called health-ease-dis-ease which implies that no human being is categorized as either being completely healthy or completely diseased. Rather we are all classified as being somewhere between the virtual poles of total wellness and total illness.

Furthermore, by seeking the health phenomena the researcher is freed from the isolation of being limited to a particular disease entity. This means that scientists begin to deal with the generalized factors involved in movement along the continuum and not just the factors specific to a certain disease entity. Furthermore, Antonovsky (1994) claimed that if we assume that stressors are ubiquitous we tend to turn our attention away from the potential pathogen and from the specific answer to a given pathogen but rather become concerned with the resources that are of value in coping with a wide range of pathogens and stressors, which leads to the anticipation of the emergence of new pathogens.

In the salutogenic paradigm we also tend to avoid hysteria about stressors and move away from the traditional question of: ‘How can we eradicate this or that stressor?’ towards a new way of thinking where we ask: ‘How can we learn to live, and live well, with stressors, and, possibly even turn their existence to our advantage?’ According to Antonovsky (1994) “recognition of the limited utility of wars against diseases X, Y and Z, or the search for utopia, leads us to focus on the overall problem of adaptation, of the
perceptual struggle for sources of adaptation, negative entropy – of input into the social system, the physical environment, the organism and lower order systems, down the cellular level to counteract the immanent trend to entropy”.

The salutogenic paradigm constantly focuses on entities and events that move against the usual course of action, on those who make it against the high odds that human existence poses. This paradigm is grounded in the belief that by being human we are all in a high-risk group (Antonovsky, 1994). In the following subsection of this chapter, the implications of the salutogenic orientation are reviewed.

### 3.6 Implications of the Salutogenic Orientation

When looking at the implications of the salutogenic paradigm, we can conclude the following. Firstly, the dichotomy of individuals being either healthy or diseased, as typified by the pathogenic viewpoint, must be discarded in favour of what Antonovsky came to define as the “health-ease-dis-ease continuum” (1987, p.3). This viewpoint highlighted that all individuals fall on a continuum somewhere between the two theoretical poles of total illness and complete wellness. As a result, the question raised by the salutogenic paradigm becomes: “Why are people located towards the positive end of the health-ease-dis-ease continuum, and why do they move towards this end?” (Antonovsky, 1979; 1984; 1987; Compton, 2005). The aim of the new perspective is therefore to explain health, rather than disease (Wissing & Van Eeden, 1997).

The second implication of the salutogenic model is the rejection of the commonly held assumption that stressors are inherently negative (Strümpher, 2001), in favour that “stressors may have salutary consequences” (Antonovsky & Bernstein, 1986, p.53). A stressor arouses a condition of tension within an individual, if the tension is said to be managed poorly, stress results. However, if the tension is managed well, the stressor may remain ‘neutral’ or even become health enhancing by improving coping responses and resources (Compton, 2005). In contrast to the pathogenic paradigm that places the emphasis on eradicating stressors, the salutogenic paradigm places the emphasis on how to live with stressors and possibly even turn their existence to one’s advantage (Antonovsky, 1984).
Thirdly, the salutogenic orientation taught researchers and individuals to study the deviant case (Antonovsky, 1987). Thus, for example, while it is important to note correlations between conditions such as certain personality patterns, including depression and suppression of emotions, and development of infertility, the salutogenic orientation would highlight the case of the individual with such characteristics who does not develop fertility related problems. In general, “the deviants are those who make it against the high odds that human existence poses” (Antonovsky, 1984, p.117).

It should be noted that Antonovsky (1987) explicitly stated that he does not advocate rejection, abandoning or discarding of the pathogenic view. For example, research into the theory, prevention and therapy of patients with conditions of infertility should continue as it provides hope and relief for many patients who suffer from infertility. Although Antonovsky suggested that the two orientations are complementary, he felt that there could be a more balanced representation of the newer field of salutogenesis. According to Folkman and Moskowitz (2000), as well as Lazarus (2000), the direction in which current research on stress and coping is developing suggests that this balance is being addressed. A salutogenic concept known as ‘the good life’ will be discussed next.

3.7 The Good Life

The traditional approach to psychology was firstly, to cure mental illness, secondly to find and nurture genius, and thirdly to make normal life more fulfilling (Compton, 2005; Linley & Joseph, 2004). Allport (1961) viewed the “healthy, mature person” or optimally functioning person as someone who possesses a variety of functional characteristics, including the capacity for close relationships, a positive view of himself or herself, common sense, objectivity about the self and others, the capacity for self-extension, and perhaps most importantly, a unifying philosophy of life. Similarly, Maslow (1954) described the optimally functioning person as a self-actualizer, he stated that these are individuals who maintained a capacity for awe and peak experience. Maslow further explained that a ‘self-actualiser’ is someone who is creative, democratic, unpretentious and who possesses a nonhostile sense of humour and a deep compassion for others.
As mentioned previously most research was spent in seeking ways to treat people in such a way that they moved from a state of negative emotionality to what Compton (2005) describes as a neutral position (Ryan & Deci, 2000). Traditional psychology at the time did not address the question of how to move an individual from this ‘neutral position’ to a more positive place of enhanced adaptability, well-being and happiness. It is with this in mind and in an effort to remedy the relative neglect in these areas of traditional psychology that positive psychology developed (Compton, 2005).

One of the core themes that define positive psychology is a focus on the elements and predictors of the good life (Compton, 2005). Seligman and Steen (2005) described the good life as being composed of human strengths that act as buffers against mental illness and include, amongst others, positive individual traits such as courage, future-mindedness, optimism, faith, work ethic, hope, honesty and interpersonal skills. These life regulating qualities empower the individual by increasing their coping resources thus allowing them to become hardier individuals (Kobasa, 1979). Positive psychology therefore focuses on what constitutes the type of life for human beings that lead to the greatest sense of well-being, satisfaction or contentment, and the good life (Compton, 2005; Linley & Joseph, 2004). According to Compton, ‘the good life’ is based on philosophical speculations about “what holds the greatest value in life” or “what is the nature of the highest and most important good” (p.6). In other words ‘the good life’ refers to the factors that contribute most to a well-lived and fulfilling life. Dent stated: “Things that are good may also be considered from the point of view of how they will contribute to a well-spent or happy human life. The idea of a complete need and destiny of humans, the *summum bonum*” (in Honderich, 1995, p.322).

The good life is defined by qualities that enrich our lives, make life worth living, and foster strong character. Seligman (2002) defined the good life as “using your signature strengths every day to produce authentic happiness and abundant gratification” (p.13). Positive psychology views ‘the good life’ as consisting of three elements: (a) positive connections to others, (b) positive individual traits, and (c) life regulation qualities. Furthermore Compton (2005) stated that aspects of our behaviour that contribute to

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4 “Summun” is the Latyn for “the highest part of the sum” and “bonum” the Latyn for “good properties” or “good things”. Thus the phrase “summum bonum” means “good climax”.

forging positive connections to others include: the ability to love, the presence of altruistic concerns, the ability to forgive, and the presence of spiritual connections to help create a sense of deeper meaning and purpose in life. Positive individual traits can include: a sense of integrity, the ability to play and be creative, and the presence of virtues such as courage and humility. Finally, life regulation qualities are those that allow us to regulate our day-to-day behaviour in such a way that we can accomplish our goals while helping to enrich the people and institutions that we encounter along the way. These qualities include a sense of individuality or autonomy, a high degree of healthy self-control, and the presence of wisdom as a guide to behaviour (Compton, 2005).

In summary, one of the distinguishing traits of positive psychology is a focus on what constitutes the type of life that leads to the greatest sense of well-being, satisfaction or contentment, and the good life for human beings. Furthermore, positive psychology views a worthwhile definition of the good life a construct that is not only an individual achievement that is removed from social context, but rather “the good life must include relationships with other people and with society as a whole” (Compton, 2005, p.7). Furthermore Seligman and Steen (2005) suggested that the time has arrived for psychotherapy to be understood as a place where one goes to discuss one’s strengths and not one’s troubles. They add that the time has come where psychologists must answer the question: “How can we become lastingly happier?” instead of answering the question: “How can we reduce the suffering?” (p.420). There is a growing body of research on the topic of positive psychology, and in the following section the researcher reviews studies with a focus on positive psychology.

3.8 Positive Psychology Research

3.8.1 International Research Studies

Since the rise in awareness of well-being and health or positive psychology, there has been a growing group of researchers who are active both nationally and internationally across a broad range of topics in this particular field. Seligman along with his colleagues laid the foundations for a positive psychology in order to complement deficit-based approaches (Seligman, 2002; Seligman & Csikszentmihalyi, 2000; Snyders & Lopez,
On the international front Seligman can be described as the father of positive psychology along with Csikszentmihalyi (2000) who are heading increasingly away from mental illness towards mental health. Snyder and Lopez (2005) compiled a comprehensive book covering various aspects of positive psychology while Carr (2004) explored the science of happiness and human strengths in his book on positive psychology.

International pioneers in the field of positive psychology and coping in general includes Bandura (1977), Hammer and Marting (1988), Lazarus and Folkman (1984), and Hobfall (2001) who all researched the constructs of coping and coping resources. However, Antonovsky (1979; 1984; 1988; 1993) made the main contributions to the research body on sense of coherence. Diener (2000) can also be seen as a key researcher in the area of positive psychology with his research that focuses specifically on subjective well-being, life satisfaction and life happiness. Finally, Myers (2000) also an important contributor to the emerging paradigm of positive psychology concentrated his studies and research on life happiness.

3.8.2 Local/South African Research Studies

In South Africa, Wissing and Van Eeden (1997) conducted various research studies looking at psychological well-being. They also offered a fortigenic conceptualization and empirical clarification on this topic. Strümpfer (2001) on the other hand devoted his time towards defining the term psychofortology which refers to a science of human strengths.

learners in the Faculty of Health Sciences at the Nelson Mandela Metropolitan University.

There are currently many research studies on positive psychology and subjective well-being being undertaken at universities such as Stellenbosch University, Freestate University and North-West University. Research completed includes that of Waddington (2005) who examined the influence of personality type and sense of coherence on coping with bereavement at Stellenbosch University. At Stellenbosch University Nortier (1999) explored the relationship between ego development and sense of coherence while Greeff (1995) looked at the characteristics of well functioning families. At Rhodes University Parker (1986) conducted a phenomenological study of happiness while Jansen (2006) looked at the relationship between emotional intelligence, sense of coherence, optimism and life satisfaction of students at the North-West University. Finally, Bouma (2001) researched the psychofortology of the learning-impaired learner at Freestate University. These researchers are all contributing to the growing source of research in positive psychology, thus allowing positive psychology to fulfill its desired role, which is to focus on the optimal health of human beings rather than focusing only on mental illness.

3.9 Conclusion

The field of stress, coping and health continues to receive much attention from psychologists, medical sociologists and behavioural researchers. As mentioned earlier, most research in this field is pathogenic in nature, with its emphasis on risk factors and prevention. Many useful contributions have been made in this paradigm. However, this chapter has highlighted the growing body of researchers and theorists who focus on individual strengths, capacities and resources. Within the positive psychology paradigm, many rich and useful insights have been gained into how individuals manage stress and stay well.

Furthermore this chapter explored the concept of positive psychology which aims to focus on individual strengths, capacities and resources. Positive psychology and its salutogenic approach continue to provide valuable insights into the mechanisms available to individuals for coping with stressors. According to Compton (2005) the popularity of positive psychology is rapidly increasing and the results from positive psychology
research are already influencing interventions, thus gaining a permanent place for positive psychology in scientific psychology.

This study in context attempts to place and facilitate the development of insight into the way in which men and women, in the midst of a crisis such as infertility, find the strength to endure and overcome the pressures associated with this condition. This research study therefore inter alia investigates four sub-facets of the sub-discipline of psychofortology, namely: (a) coping resources, (b) sense of coherence, (c) satisfaction with life, and (d) happiness. These four areas constitute the basis of psychofortology for the purposes of this study and provide an impression of the person’s general psychological well-being and coping ability. This study focuses on the participants’ well-being and ability to constructively cope with stress rather than measuring stress levels in infertility patients.

In the following chapter, the fortigenic concepts of coping and coping resources are looked at, together with their relationship to stress.
CHAPTER 4
STRESS, COPING AND COPING RESOURCES

“It is not stress that kills us; it is our reaction to it”

(Hans Selye, 1976)\textsuperscript{5}.

4.0 Introduction

For the couples who are diagnosed with infertility every year, the diagnosis brings with it a whole range of new challenges. Patients must not only confront the physical aspects of infertility, but also the psychological and social impact that accompanies this condition. A crisis such as this is often a turning point in an individual’s as well as a couple’s life (Ferreira, 2005). The stress of dealing with a condition such as infertility brings about prolonged uncertainty as well as intense personal strain and can have a profound and lasting impact on an individual or couple (Ferreira, 2005).

Modern lifestyles and the way in which we cope with stress have sparked much interest in recent years. This is largely due to the increased pace of the technological world in which we live which has largely been blamed for the increase in stress and stress-related illnesses and disorders. It is with this in mind that the researcher looked at positive psychology as it seeks to understand the different mechanisms and the manners in which individuals cope when faced with the same stressor such as infertility.

Research findings have indicated that family stress is increased by infertility treatment cycles (Berghuis, 2002). While this study did not aim to measure stress and coping in the family, it did hope to give information about the way in which males and female patients adapted to and coped with the difficulties and stress posed by infertility treatment. Lazarus’s theory of stress (1967), although developed a number of years ago, is still pertinent in today’s context and has led to the development of questionnaires on resources and stress (Holroyd, 1987) which has been used as the measurement tool for many of the studies of stress in individuals.

\textsuperscript{5} In McLeod (2004, p.28)
In order to better conceptualize the role that coping resources play in the paradigm of wellness and positive psychology, it is necessary to briefly explore the context of stress and coping.

4.1 The Concept of Stress

There are few areas of psychology that receive more attention than stress (Hobfall, 1989). There is a wealth of literature that reflects researchers’ beliefs that stress is a major factor affecting peoples’ lives and that it is directly linked to mental health, and very possibly also linked with many problems of physical health.

Although much has been written about the negative effect of stress on physical and emotional health there is growing recognition that there are positive as well as negative outcomes of stress (Park, Cohen & Murch, 1996). Researchers have endeavoured to explore a range of novel concepts including, amongst others, ‘stress-related growth’ (Park et al., 1996), ‘positive personal changes’ (Curbow, Somerfield, Baker, Wingard, & Legro, 1993), ‘meaning making’ (Park & Folkman, 1997), ‘meaning-based coping’ (Folkman & Moskowitz, 2000), ‘benefit-finding’ (Tennen & Affleck, 1999), ‘benefit-appraisals’ (Lazarus, 1999), and ‘growth-orientated functioning’ and ‘crisis growth’ (Holahan, Moos & Schaefer, 1996). This research work is all congruent with the emerging field of positive psychology that represents an alternative focus to the prominent focus on pathology and deficits.

Hans Selye (1976) conceptualized stress in terms of the body’s physical response to a demand, regardless of whether the demand is positive or negative. Stress is a very familiar word both among the layman and the professional. To a large extent this has made a clear definition of stress more difficult to identify because the term is used in so many contexts and disciplines: medicine, psychiatry, physiology, sociology and anthropology to name but a few (Lazarus, 1966). In addition, the definition of stress is made more diffused as authors’ and researchers’ writing in the area of stress use the terms ‘anxiety’, ‘conflict’, ‘frustrations’ or ‘defense’ to refer to the same phenomena others refer to as ‘stress’. Vast interest in the area of stress has developed as a result of stress being a universal human phenomenon which results in intense and distressing experiences and seems to have a very important influence on behaviour (Lazarus, 1966).
Lazarus goes on to say that it would be to our benefit to understand the processes involved in stress because, if we were to have control over these processes, we would be more effective in adapting to a stressful situation.

While there are various different definitions of stress, Monat and Lazarus (1977) defined the stress area to include any event in which environmental demands, internal demands, or both of these exceed or place demands on the adaptive resources of an individual or social system. Morris and Maisto (1996) on the other hand defined stress as any environmental demand or circumstance that creates a threat or state of tension for our well-being, and that requires change, adaptation or exertion of our coping abilities. In other words, stress is experienced when events disrupt our usual level of functioning in such a way that we are required to put in extra effort in our attempt to re-establish our equilibrium (Atwater, 1990).

According to Lazarus (1966) stress cannot be defined by situations exclusively, the reason for this being that the capacity of any situation to produce stress reactions depends on the characteristics of an individual. In addition, stress reactions in an individual do not provide adequate grounds for defining the situation associated with stress. Lazarus thus believes that only by looking at the interactions or transactions between individuals and situations can we begin to understand the meaning of stress. Selye (1976) in his studies refers to good (eustress) and bad (distress) stress. Eustress is said to heighten awareness, increases mental alertness, and often leads to improved cognitive and behavioural performance. Distress on the other hand, is damaging or unpleasant stress.

Three basic types of stress were distinguished by Lazarus: (a) systemic or physiological stress which is concerned primarily with the disturbances of tissue systems, (b) social stress which has to do with the disruption of a social system, and (c) psychological stress which deals with the cognitive factors leading to the evaluation of threat. Although all three types of stress can result from a single event, Lazarus focuses mostly on psychological stress.

Lazarus and Folkman’s (1984) model of stress has become the most widely used approach. They defined stress as “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (p.19). Stress can therefore be conceptualized as
the resulting imbalance between appraised demands and appraised resources (Lazarus & Folkman, 1984).

Although stress is experienced differently by various individuals, there are common factors that increase the likelihood of a stress response. These factors include: change, daily hassles, pressure, frustration and conflict (Morris & Maistro, 1996). Many researchers recognize that change, frustration and daily hassles connected to the infertility process can be a great predictor of the stress experienced by males and females undergoing infertility treatment.

Furthermore, Lazarus (1993) believed that the key variable causing stress is threat. He explained that threat does not refer directly to observable factors which may be present in an event, but rather must be inferred from antecedent conditions and past responses to the event. Lazarus (1993) further stated that the main characteristics of threat are: (a) that it is anticipatory or future-oriented, and (b) that it is brought about by cognitive processes involving perception, learning, memory, judgement, and thought. According to Lazarus (1967) “the observable reactions to threat will depend on the nature of the coping process that is activated” (p.159). Lazarus (1993) also stated that the effects of a stressful situation on an individual will depend more on that specific individual’s perception of the psychological situation (Brannon & Feist, 1997) than on the environmental event or the person’s response patterns. In addition, coping processes are dependent on the cognitive process of appraisal. It is also influenced and mediated by social resources (Holahan, Moos & Schaefer, 1996) and by personality traits such as optimism (Caver & Scheier, 1999). This chain reaction is best represented graphically as follows:

\[ \text{event} \rightarrow \text{threat} \rightarrow \text{appraisal} \rightarrow \text{coping process} \rightarrow \text{observable reactions.} \]

Lazarus viewed a person’s appraisal of a situation as the most significant component of stress and this is why the researcher felt it necessary to explain appraisal in more detail below.
4.1.1 Appraisal of Stress

For threat to occur, the particular situation must be evaluated to determine whether some kind of harm is signified. This process will be influenced by the individual’s knowledge and beliefs and, because of this, changing the background cognition will change the significance of a particular situation and will mean that the same situation might take on a very different significance (Lazarus, 1993). The reactions of individuals are therefore incredibly sensitive to the changes in the situation. However, reactions are also a product of the psychological structure and this is why the same stimulus or situation will result in a stress reaction in one person, but not in another (Kleinke, 1998; Lazarus, 1993).

The relationship between the properties of the individual and the properties of the situation can be understood through the cognitive process of appraisal (Lazarus, 1993). Appraisal therefore refers to the judgment made about the meaning or future significance of a situation, based not only on the characteristics of the stimulus, but also on the psychological makeup of the individual (Kleinke, 1998).

Lazarus would be able to use his theory to explain why some infertility patients seem to cope with their stressful experiences, while others reach exhaustion and burnout, as described by Selye’s theory (Brannon & Feist, 1997). It is for this reason that the concept of stress is inherently linked to that of coping. In a logical follow on to considering the way in which stress is appraised, the various ways (models) in responding to stress are discussed below.

4.1.2 Stress Response Models

Response definitions have been prevalent in biology and medicine and refer to a state of stress. Stimulus and response definitions are limited in use, as a stimulus can be defined as stressful only in terms of a stress response (Lazarus & Folkman, 1984). Stress as an internal tension can be described as an internal state of psychic struggle, tension, anxiety, or even panic. A person may react to stress by using negative defenses, such as denial or rationalization, or they might embrace stress in a more positive manner, perhaps by generating creative solutions to solve their difficult problems (Antonovsky, 1979; Lazarus & Folkman, 1984).
According to Rice (1998) stress drains energy and motivation if perceived threat continues over an extended period of time, without an apparent end to the stressful situation. In the case of patients undergoing infertility treatment, severe stress is experienced due to, for example, repeated treatment cycle’s, failed treatment cycles, socio-economic problems and societal pressure to produce (Daniluk & Tench, 2007; Ferreira, 2005).

According to Coyne and Holroyd (1982) there are three stress response models, namely: (a) the Response-based model, (b) the Stimulus-based model, and (c) the Interactional model. These three models will now be described in more detail.

The Response-based model conceptualizes stress as a dependant variable. According to Lazarus and Folkman (1984) approaches that use this model tend to be concerned with specification of the particular response or pattern of responses, which may be taken as evidence that the person is under pressure from a disturbing environment. According to Selye (1976), the response syndrome represents a universal pattern of defense reactions serving to protect the person and preserve its integrity. The General Adaptive Syndrome was introduced by Selye (1976), and can be described as a defense reaction which progresses with continual or repeated exposure to a specific stressor through three stages. These three stages are: (a) the alarm reaction stage, (b) the resistance stage, and (c) the exhaustion stage.

The alarm reaction stage is known as the stage where the body displays changes that are characteristic of initial exposure to a stressor. The body’s levels of resistance are reduced during this phase and if the stressor is perceived as too severe death may even result (Selye, 1976). The resistance phase follows if an individual feels that they can adapt to exposure of the stressor. During this stage of resistance it is said that the individual’s resistance rises above normal as they adapt to the stressor (Selye, 1976). The final stage, known as the exhaustion stage, follows after long term exposure to a specific stressor. Exhaustion results and causes collapse. Should the defense response be severe and prolonged, disease may occur (Selye, 1976).

The response-based model has been criticized by Monat and Lazarus (1977), who stated that different stimulus conditions may result in the similar response pattern. For example, an increased heart rate may not occur only after stress, it can also occur as a
result of prolonged and heavy exercise or extreme fright. It was with this in mind that Monat and Lazarus (1977) introduced the stimulus-based model. This model can be defined in terms of the disturbing environment or external stressors which are disruptive to a person. Thus this model views stress as an independent variable. A situation is seen as stressful in this model if it leads to a stress response such as breathlessness, heart palpitations and anxiety (Mulhall, 1996).

The interactional model defines stress as an imbalance between the environment and the person. Stress cannot be objectively defined as the level of the environmental conditions without referencing the characteristics of the person. Lazarus and Folkman (1984) thus stated that what is seen as stressful by one person is not necessarily stressful for another. Thus implying that according to this model stress is a dynamic system of interaction between an individual and his or her environment (Lazarus & Folkman, 1984; Mulhall, 1996). Lazarus, in Weiten, Lloyd and Lashley (1991), stated that “stress resides neither in the situation nor in the person; it depends on the transaction between the two” (p.64). This eclectic definition draws on both the response and stimulus model definitions. Stress is therefore a subjective phenomena grounded in individual perception and psychological processes. According to Lazarus and Folkman (1984) it incorporates the objective situation as well as the individual’s subjective psychological and physiological responses or appraisals. As there is a feedback component which occurs at the end as well as during the process of stress in the interactional model, it can be seen as a cyclic rather than a linear approach. According to this theory, the impact of a stressor is mediated by the individual’s appraisal of the stressor in terms of the risk to the person and their ability to cope with the situation (Lazarus & Folkman, 1984).

Hobfall (1989) introduced another model of stress, the Conservation of Resources Model, which could be added to the above conceptualizations. Hobfall’s (1989) model suggests that an individual constantly strives to retain, protect and build on their coping resources. Hobfall further believed that when focusing on stress one should direct one’s focus to the resource side of the equation. A potential or perceived loss of these resources will result in threat or a stressor. It can therefore be seen that Hobfall (1989) saw an event as demanding or not based on an individual’s coping capacity, and whether the coping capacity is adequate or not. Hobfall’s model further suggests that people possess
resources which are important to them, and that they desire to protect and conserve these resources. These resources include: (a) objects such as a home, a family or a business, (b) condition resources such as seniority, power, marriage, or children, and (c) personal characteristics such as self-efficacy and self-esteem as well as (d) energies such as time or knowledge (Hobfall, 1989).

Hobfall (1989) has thus conceptualized stress in terms of a reaction to the environment, in which there is either (a) the actual threat of a loss of resources (e.g., possible loss of family), (b) the net loss of resources (e.g., bankruptcy, loss of home), or (c) the lack of resource gain following the investment of resources (e.g., time, possessions). In other words he conceptualized stress in terms of the potential loss of coping resources available to one that may be experienced in a stressful situation.

This subsection again underlines the complexity in attempting to define stress. The concept of stress was presented in this chapter since it lays the groundwork to understanding the sample of infertility patients who participated in this study. Lazarus’s (2000) recent research of the treatment of stress has focused on the cognitive, behavioural and relational concepts of appraisal and coping. According to this approach, should the individual change his or her thinking patterns or appraisal of a stressor, this would influence how the individual relates to that stressor and thus the resultant behaviour will also change accordingly.

In the next section stress in relation to chronic illness is discussed. Infertility can be considered within the context of a chronic illness as a diagnosis such as infertility often brings much stress with it and has the potential to elicit chronic effects on an individual.

4.1.3 Stress and Chronic Illness

To be diagnosed with infertility or reproductive related problems is appraised by most individuals as a significantly stressful life event. According to Cooper-Hilbert (1998), most patients experiencing infertility have intense periods of anxiety, depression, helplessness, relationship or marital difficulties and cognitive impairments at some time during the course of their treatment cycles. While some of these difficulties can be overcome as patients learn to adjust, accept and cope with their infertility, the stress induced invariably puts excessive demands on their coping abilities and may play a
significant role in their prognosis. In addition to the stress caused by an infertility diagnosis as well as infertility treatment cycles, researchers have also investigated the implications of stress in the development of illnesses that are chronic.

Researchers have for many years speculated about the link between stress and the development of illness. According to Azar (1999) psychological stress has the tendency to precipitate various kinds of illnesses, from headaches and mouth ulcers to cancer, infertility and viral illnesses. Monat and Lazarus (1977), as well as Friedman (1989), explained that there are three main ways in which stress can lead to physical illness. The first is the disruption of tissue function through the release of powerful hormones during times of excessive and prolonged stress. These hormones according to Saladin (2001) create changes in the nervous system, the immune system, the endocrine system and the reproductive system. The field of psycho-neuro-immunology (PNI) has largely been dedicated to the study of the interactions among behaviour, the nervous system, the endocrine system and the immune system (Brannon & Feist, 2000).

The second group of factors affecting the relationship between stress, coping and health are psychological in nature (Edelman & Kidman, 1997). This suggests that it is rather the individual’s attitudes or coping responses which might relate to the onset of the illness rather than the stress per se. Factors known to affect the onset of illness are personality type, information processing, perceived levels of stress, primary appraisals, secondary cognitive appraisals and attributions as well as beliefs. With regards to infertility treatment there are a few studies that have investigated coping responses such as helplessness, depression and emotional suppression as possible factors that influence treatment cycles (Cooper-Hillbert, 1998; Daniluk & Tench, 2007).

The third and last group of factors that have an effect on the interplay between stress, coping and health, are the social support systems that exist within an individual’s daily life (Rice, 1992). Examples of support systems are family, employment and other environmental resources. Uchino, Cacioppo and Kiecolt-Glaser (1996) stated that a strong network of friends and family who provide social support could assist a person to maintain good health when faced with a stressful life event such as infertility. It is not yet fully understood why the presence of a healthy social support system is related to good health. However, it must be taken into consideration that difficulties discussed in a
supportive and understanding environment are often reassessed by the individual and new ways of coping are created with the result that the perceived stress is reduced (Morris, 1999).

In general, it is believed that individuals who have few psychosocial resources appear to be more susceptible to illness and mood disturbances when faced with higher stress levels than individuals who have a great deal of social support (Salovey, Rothman, Detweiler & Steward, 2000). This study does not however focus on illness and stress exclusively, rather on how individuals cope and thrive during a stressful life event and thus the section below explored the salutogenic view of stress.

### 4.1.4 The Salutogenic View of Stress

Research done by Antonovsky within the salutogenic field of health and stress has reviewed many of the conceptualizations of stress. For the most part, both lay people and professionals were inclined to equate stress with rather unusual and extreme circumstances. Antonovsky’s research contradicted this perception of stress. One of the core assumptions advanced by Antonovsky (1987) was that the most typical characteristic of the living organism was “heterostasis, disorder, and pressure toward increasing entropy as the prototypic characteristic of the living organism” (p.2). The salutogenic orientation is predominantly rooted in the underlying principles of the chaos theory (Antonovsky, 1987; 1996). This view of chaos as the ‘norm’ challenged the concept of homeostasis that was first introduced by Canon (1939).

Antonovsky (1987) referred to the human system, that is inherently flawed and subject to unavoidable entropic processes, as the “ubiquitous stressors of living” (p.164). Hence Antonovsky argued that stressors, rather than isolated negative events were an unavoidable part of daily living. Besides extreme forms of oppression and consequent stress suffered by some of the populations which Antonovsky studied, it became evident that even people in comfortable, benign, sheltered environments are continuously exposed to stressors (e.g., accidents, physical trauma and psychosocial stressors).
Antonovsky (1987) further indicated that:

> Whether the source of the stressors is the internal or external environment, whether they are daily hassles, acute or chronic and endemic, whether they are imposed on us or freely chosen, our lives are replete with stimuli to which we have no automatic, adequate adaptive response and in the face of which we must respond. (p.130)

Furthermore, according to Antonovsky (1979), “stressors are omnipresent in human existence”, and he therefore concluded that, in fact, “the human condition is stressful” (p.10). While he did not use the term, Strümpfer (1993) highlighted that Antonovsky was describing social heterostasis, in contrast to Cannon’s ideal of social homeostasis. It was with this idea in mind that the question was raised as to how individuals survive this continuous bombardment of pathogens. It became clear that individuals obtained strength from inner resources to cope with these ever challenging situations and environments and that some individuals had a tendency to cope better than others. In both research and practice this line of thinking lead researchers to attend to the range of what Antonovsky (1996) labeled as generalized resistance resources, which people use for coping with a diversity of pathogens and stressors.

While the view that stressors are ever present lies at the heart of the salutogenic orientation, stressors are not necessarily viewed as deleterious in effect. Antonovsky (1987) quoted Selye’s suggestion concerning eustressors when he discussed the fact that stressors are not all inherently negative and may even produce positive outcomes. Selye (1976) in his suggestions drew attention to the distinction between tension and stress. While all stressors are believed to cause psychological and physiological arousal or tension within an individual, the translation of that tension into stress is mediated by the individual’s internal reactions and responses to a particular event (Antonovsky, 1987). In the next section the concept of coping is explored.
4.2 The Concept of Coping

Coping is a process wherein one makes use of flexibility to respond with the skills and strategies best suited to a stressful situation (Kleinke, 1998). Lazarus and Folkman (1984) defined coping as the “constantly changing, cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p.141). According to Kleinke (1998), this definition consists of three key features, namely:

1. An implication that coping involves a certain amount of effort and planning.
2. An assumption that the outcome of a response will not always be positive.
3. An emphasis that coping is a process that takes place over time.

Lazarus and Folkman’s (1984) model of stress emphasizes the role of appraisal in determining whether demands become stressors. Their model, which has become widely accepted by researchers, was described by Somerfield and McCrea (2000, p.620) as “now-classic writings”. Lazarus and Folkman (1984) defined coping further as being process-orientated (i.e., the active efforts to overcome, master, reduce or tolerate the negative consequences of internal or external demands). Lazarus and Folkman (1984) outlined two processes that occur when an individual encounters a stressor. These are appraisal and coping.

Primary appraisal can be described as the process whereby an individual appraises whether a situation can bring harm or negative consequences. It can therefore be said that primary appraisal is concerned with the individual’s physical as well as psychological well-being. If a situation is appraised as a threat or harmful by an individual, the individual starts a process called secondary appraisal. Secondary appraisal is the process whereby people assess their resources in an attempt to reduce their emotional and physiological tension. Coping or tertiary appraisal is the third phase and includes actions, a change in thinking, redefining the situation, or anything else that the individual feels will be appropriate after the primary and secondary appraisal (Lazarus & Folkman, 1984). According to Schafer (1996) the strategy that is finally chosen to utilize in the process of coping depends on the personal and environmental coping resources that are potentially available as the person appraises his/her options.
Coping has been found to be process-orientated rather than trait-orientated. It takes place across a span of time and is therefore not aimed at mastery (Appley & Trumbull, 1986). According to Parker and Endler (1996) coping has multiple functions including, but not exclusively, the regulation of distress and the management of problems causing distress. It is not a natural or automatic response, but rather a learned pattern of responding to situations considered by an individual to be stressful (Brannon & Feist, 1997).

Coping can be seen as a diverse concept that can be broken into three broad components namely: (a) physiological, (b) learned, and (c) cognitive. The components can be described as follows:

1. The physiological component which is related to the trigger of a chain of neuro-endocrine events that takes place as the body attempts to physically cope with stress (Frankenhauser, 1986).
2. The learned component which can be defined by various social learning theories, which assume that much of human motivation and behaviour is the result of what is learned through experiential reinforcement (Bandura, 1977).
3. The cognitive component which emphasizes the mental process of how the individual appraises the situation. As mentioned earlier, one’s level of appraisal determines one’s level of stress as well as the unique coping strategies that the individual uses (Lazarus & Folkman, 1984).

Coping is influenced by the appraised characteristics of a stressful context, including its controllability (Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986). It is also influenced and mediated by social resources (Holahan et al., 1996) and by personality traits, for example, optimism (Carver & Scheier, 1999). It is believed that one’s ability to cope to change is very strongly related to one’s tolerance for stress.

Atwater (1990) described the process that individuals use to cope with their environment and with social change as the process of adjustment. Calhoun and Acocella (1990) defined adjustment as “your continuous interaction with yourself, with other people and with your world” (p.13). Calhoun and Acocella (1990) stated that the relationship between an individual and these two factors is reciprocal as each influences the other. It can thus be concluded that relations exist between an individual, the
environment and within the individual themselves. Good adjustment can be indicated by healthy relations between the above factors, whereas relations that are ineffective, unsuccessful and immature are characteristic of maladjustment (Fouché & Grobbelaar, 1983). According to Calhoun and Acocella (1990), adjustment is a process that can be learnt and purposefully used in stressful situations. Adjustment can be seen as the outcome after the successful negotiation of a stressor.

For patients undergoing infertility treatment successful coping with their constantly changing environment will lead them to be able to adequately adjust to the infertility treatment cycles they find themselves in. Male and female patients undergoing fertility treatment cycles responds to direct stress (e.g., treatment procedures) and indirect stress (e.g., social or financial pressures) concerning their treatment in many different ways and utilize many different coping mechanisms. It is these coping responses and resources that are explored in the section below.

4.2.1 Coping Responses

Lazarus and Folkman (1984) further identified two general coping styles in which to cope with a stressful situation, namely: (a) problem-focused coping and (b) emotion-focused coping. Problem-focused coping strategies can be outer-directed or inner-directed. According to Kleinke (1998) outer-directed coping strategies are orientated towards altering the situation or changing the behaviours of others, while inner-directed coping strategies include efforts made to reconsider our own attitudes and needs and to develop new skills and responses. Emotion-focused coping on the other hand is orientated towards managing emotional distress, these coping strategies include: physical exercise, meditation, expressing feelings, and seeking support.

Problem-focused coping are used more regularly in a situation where one feels that there is something you can do about a particular problem or challenge, however, when a problem or challenge is appraised as beyond an individual’s control, they are more likely to rely on emotion-focused coping (Folkman & Lazarus, 1980; Vitaliano, DeWolfe, Maiuro, Russo & Katon, 1990).

Research indicates that gender seems to play a determining factor in the type of coping response used by infertility patients. Research done by Connell, Janevic and Gallant
(2001) found that women are more likely to use emotion-focused coping, while men are more inclined to use problem-focused coping styles. In another survey of coping styles, married couples were questioned about their responses to four different sources of stress: marriage, parenting, household finances, and work (Pearlin & Schooler, 1978), which are very relevant stressors when looking at patients on fertility treatment (Ferreira, 2005). Participants experiencing lower levels of emotional stress predominantly used coping responses that included taking an active, self-reliant, problem-solving approach, while greater amounts of emotional distress were experienced by people who felt helpless, blamed themselves, and engaged in denial and avoidance (Pearlin & Schooler, 1978).

McCrea and Costa (1986) surveyed people on their experiences with various coping responses when faced with losses, threats, and challenges. It was found that the most effective coping responses included: seeking help, communicating feelings, taking rational action, drawing strength from adversity, using humor, and maintaining faith, self-confidence, and feelings of control. The least effective coping responses observed included: hostility, indecisiveness and self-blame.

Even though individuals seem to cope with a stressor it is not always necessarily a constructive coping strategy that is employed by the individual. Weiten, Lloyd and Lashley (1991) divided the coping process into two main groups, namely: (a) maladaptive or with limited values, and (b) constructive-adaptive coping processes that are limited and includes: giving up, striking out at others, self-blame, and defensive coping. McCrae and Costa (1986) regarded seeking help, communication, using humor, self-confidence, a feeling of control, maintaining faith, and drawing strength from adversity as the most effective ways of coping with a stressful situation. During a research study done by Ferreira (2005) infertility patients reported feeling that they needed stress management, a religious base, a support system and knowledge of medical procedures in order to enhance their coping abilities.
Weiten, Lloyd and Lashley (1991) gave the following guidelines in order to apply constructive coping:

1. An individual needs to confront problems directly.
2. An individual needs to use realistic appraisals of the stressors they face and coping resources available to them.
3. A constructive coper seeks to recognize and occasionally inhibit potentially disruptive emotional reactions to stress.
4. Constructive coping seeks to exert control over potentially harmful or destructive or habitual behaviours.

Folkman, Lazarus, Dunkel-Schetter, DeLongis and Gruen (1986) also researched effective and ineffective coping responses by listening to people’s reports on how they cope with a recent stressful experience, such as a loss of self-esteem, concern for a loved one, interpersonal conflict, financial strain and health problems. It was found that people who reported satisfactory resolution of their stressful experience tended to cope by maintaining their composure and working out a plan as well as using the stressful experience as an opportunity for personal growth. On the other hand, those who did not find successful resolution to their problem responded by being impulsive, aggressive, being angry, or by ignoring the problem and downplaying its importance.

A coping strategy identified by Kramer (1993) was that of relationship-focused coping. Relationship-focused coping is aimed at maintaining and regulating social relationships and would be integral in maintaining the much needed social support system (Ferreira, 2005) for male and female infertility patients. Hammer and Marting (1988) provided a tool for identifying resources that are available to individuals for managing stress, with the primary focus on identifying resources rather than deficits. Their model which was used during this research study measures an individual’s resources across five domains namely: cognitive, social, emotional, spiritual/philosophical and physical. This measure is discussed in more depth in Chapter 6.

The fortigenic concept of coping resources and the shift from the focus on demands to a focus on resources is discussed in the following section of this chapter.
4.2.2 Coping Resources

The role of coping resources is emphasized within the paradigm of positive psychology as a means of mediating the stress response and promoting wellness (Hobfall, 2001). According to Hobfall (1989), resources can be defined as: “those objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies” (p.516). Kessler and Essex (1982) described individuals with low resources as vulnerable and constitutionally fragile, while those with high resources have been characterized as resilient.

According to Lazarus and Folkman (1984), the way people cope is heavily dependent on the resources available to them and the constraints they face. It is therefore right to assume that coping resources are concerned with the resources one draws on in order to cope. However, Matheny, Aycock, Pugh, Curlette and Canella (1986), stated that some resources are effective in helping individuals deal with stressors, while others may be important in preventing demands from becoming stressors. They had suggested that “increasing one’s (coping) resources should positively affect the equation between perceived demands and resources at the appraisal stage” (p.533).

Hammer and Marting’s (1988) Coping Resource Inventory (CRI) examines the resource end of the demand-resource imbalance. The CRI was utilized during this study and provides a comprehensive structure of assessment across five domains of functioning as well as offering a detailed explanation of coping resources available to individuals faced with a stressful situation such as a diagnosis of infertility. The five domains assessed by Hammer and Marting’s (1988) CRI are the: cognitive, social, emotional, spiritual/philosophical and physical domains.

1. Cognitive: Which measures the extent to which individuals maintain a positive sense of self-worth, and includes a positive outlook towards others as well as life in general.
2. Social: The social domain captures the degree to which individuals are actively involved in the social networks that are able to provide support in stressful times.
3. Emotional: The items in this domain measure the degree to which individuals can accept and express a range of emotions. This is based on the premises that an ability to express a range of emotions will reduce the long-term effects of stress.

4. Spiritual/Philosophical: This domain measures the degree to which individuals are guided by stable and consistent values that are derived from religion, family, cultural traditions and from personal philosophy. These values could serve to provide meaning in allowing an individual to frame life-events in a certain way.

5. Physical: The physical domain aims to measure the extent to which an individual is actively involved in health-promoting behaviours that are believed to contribute to increased levels of physical well-being.

This biopsychosocial conceptualization can be seen as relevant to the exploration and description of the coping resources used by patients undergoing fertility treatment. Hobfall (2001) defined an event as demanding based on whether the person’s coping ability is adequate to meet the demand. This model implies that the most effective units for understanding the dynamic relationship between stress and coping is through resources. In a situation where a stimulus is judged as harmful, coping processes are implemented by an individual to undo the harm implemented (Monat & Lazarus, 1977). Coping resources may be grouped into a few major categories such as: health and energy, positive beliefs, problem solving skills, social skills, social support and material resources (Hobfall, 1989; Kessler, 1979).

According to Monat and Lazarus “coping refers to efforts to master conditions of harm, threat, or challenge when a routine or automatic response is not readily available” (Monat & Lazarus, 1977; Hobfall, 2001). New behavioural solutions must be devised or old solutions must be adapted to meet current stress in these situations (Monat & Lazarus, 1977; Hobfall, 2001).

Lazarus suggests a view of coping, which places emphasis on two major categories: direct actions and palliative modes. Direct actions refer to behaviours which are designed to alter a distressing interplay with the social or physical environment, for example fight or flight response. Palliative modes of coping on the other hand refer to thoughts or actions whose goal is to relieve the emotional impact of stress (Monat & Lazarus, 1977). Both of these methods make a person feel better rather than causing them to actually alter
the threatening or damaging situation. Monat and Lazarus (1977) further explained that some palliative methods are intra psychic in nature. These would include, for example, defense mechanisms or the displacement of attention from the stressful circumstances. Other palliative methods are somatically oriented, for example, medication and relaxation.

According to Rice (1992) “resources are the basic supplies of coping strategies” (p.272); these resources can be divided into three categories: personal, physical or social. Personal resources include self-esteem, self-denigration, perception of control and self-efficacy. Physical resources may include the following: satisfactory health and sufficient energy to meet the demands of the situation and practical resources may include housing and money, while social support includes support from significant others. Social support is considered to be a core coping resource as it provides protection from the detrimental effects of stress and is directly valuable and beneficial in itself (Rice, 1992).

Hammer and Marting (1988), whose model of coping resources will be adopted for the purposes of this study, stated that people make use of coping resources to facilitate more effective management of stressors. Coping resources can be defined as “those resources inherent in individuals that enable them to handle stressors more effectively, to experience fewer or less intense symptoms upon exposure to a stressor or to recover faster from exposure” (Hammer & Marting, 1988, p.2).

According to Lu and Chen (1996) three factors are present when examining coping resources and coping behaviour: (a) in certain types of coping behaviour demographic variables and personality traits play a role, (b) perceived life stress is not related to coping behaviours, and (c) greater social support is related to greater use of all kinds of coping behaviour.

As coping not only includes coping resources but a coping orientation such as the sense of coherence a discussion of sense of coherence follows.

4.3 Sense of Coherence

The salutogenic construct that was formulated by Antonovsky (1993), that is the sense of coherence (SOC), promotes a “re-orientation towards why, despite being exposed to constant stressors, some individuals maintain their health, while others in similar
situations experience health breakdowns” (Levert, Lucas & Ortlepp, 2000, p.37). Antonovsky’s research helped shift the focus of research from the pathogenically orientated medical model to one that explores health and strength rather than disease.

The SOC construct can be seen as a coping resource that attempts to explain the facilitation of successful, functional coping of the individual in everyday life in the face of many, complex stressors, towards a sense of health and well-being (Antonovsky, 1984; Levert, Lucas & Ortlepp, 2000).

Antonovsky (1993, p. 725) defined the SOC as:

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

Three components are identifiable from this definition: (a) comprehensibility, which is the cognitive element that focuses on the person and the belief that the environment is structural, predictable, and explicable, (b) manageability, which is the instrumental element concerning the belief that one has resources available to deal with the stressor, and (c) meaningfulness, which is the emotional element that concerns perceiving the demands of the environment as a challenge worth taking up (Antonovsky, 1993). These three concepts are all intertwined and strongly related to one another (Antonovsky, 1988). According to Strang and Strang (2001) meaningfulness represents the most important part of the SOC construct since without it neither comprehensibility nor manageability will last.

Antonovsky’s model of SOC, which will be used for the purpose of this study, is not a coping style. However it is vital for coping with potentially stressful situations that are part of life, and it helps to facilitate the immobilization of resources necessary for effective coping (Antonovsky, 1988; 1996; Levert et al., 2000). Antonovsky suggested that an individual with a strong SOC would select a coping strategy that is appropriate and would therefore cope more effectively with a stressful situation. The successful coper approaches the world with the view that stressors are manageable: under the control of
both the individual and legitimate others, meaningful: motivationally relevant, in the form of welcome challenges that are worth engaging with and investing oneself in, and comprehensible: making cognitive sense. Conversely, an individual with a poor SOC is prone to anxiety and psychological distress (Antonovsky & Sagy, 1986). It is evident that there is a direct relationship between a strong SOC and successful coping, whereas a weak SOC is linked to less successful coping (Antonovsky & Sagy, 1986).

Sense of coherence develops over one’s lifespan until the age of 30, when it becomes relatively crystallized. Antonovsky (1987) stated that in adolescence the development of one’s SOC is mainly influenced by cultural and social factors. Age, parent-adolescent relationships and the stability of long standing commitments (e.g., spouse, children, community, etc.) in adulthood are all also factors which affect the development of SOC (Antonovsky & Sagy, 1986). SOC is considered to be a universal construct that is meaningful across different genders, social classes, religions and cultures (Antonovsky, 1996, Levert et al., 2000), making it a valuable and appropriate construct to use in a South African research framework.

Thus the SOC of an individual undergoing infertility treatment can be used to explain successful coping in their stressful treatment cycles. Next the construct sense of coherence and how it relates to coping resources is explored in more detail.

4.3.1 Sense of Coherence and Coping Resources

Antonovsky was of the opinion that although stress is omnipresent and part of our everyday lives, people generally possess resistance resources which assist them to cope with the wide variety of stressors they encounter (McLeod, 2004). Individuals with a weak SOC are said to perceive internal and external stimuli as unexplained disorder and chaos and as unpredictable in terms of the future. They also usually feel unfairly victimized by these events (Strümppher, 1993). Thus individuals with a low SOC are psychologically more prone to feeling distressed before a stressful situation and also maintain these greater levels of distress subsequent to the event (McSherry & Holm, 1994). McSherry and Holm (1994) also reported that individuals with a low SOC are less likely than individuals with a high SOC to believe that they possess resources that they can utilize to cope with stressors.
The SOC is a dispositional orientation, not a state or trait, and “what a person with a strong SOC does is to select the particular coping strategy that seems most appropriate to deal with the stressor being confronted” (Antonovsky, 1987, p.138). In other words, a person with a strong SOC is able to choose appropriate resources from their existing generalized and specific resistance resources.

According to Antonovsky (1996) an individual with a strong SOC will be able to utilize their Generalised Resistance Resources (GRRs) when dealing with a stressor. GRRs can be defined as: “a property of a person, a collective or a situation which, as evidence or logic has indicated, facilitates successful coping with the inherent stressors of human existence” (Antonovsky, 1996, p.15). GRRs thus enable an individual to be more likely to perceive specific stimuli as a non-stressor and to assume that they adapt automatically to the demand. This strong belief in the availability of coping resources allows an individual to choose the appropriate strategy to utilize from their available resources. GRRs therefore are resources which facilitate effective tension management in any given situation (Anson, Carmel, Levenson, Bonneh & Moaz, 1993).

Antonovsky (1979) described a range of GRRs including emotional, macro-socio-cultural, interpersonal-relational and cognitive GRRs. According to Antonovsky (1979) the strength of an individual’s SOC is dependent upon their ability to utilize the GRRs available to them. Antonovsky developed a 29-item Sense of Coherence Scale (SOC-29), also known as the Orientation to Life questionnaire, which was used in this study to measure this concept. Sense of coherence and boundaries are briefly discussed in the next section.

4.3.2 Sense of Coherence and Boundaries

According to Antonovsky (1987) there are four areas comprising a person that need to be included in order to maintain a strong SOC, namely: (a) one’s own feelings, (b) immediate interpersonal relations, (c) activity (e.g. work), and (d) the existential experiences of death, failures, shortcomings, conflict and isolation.

Antonovsky (1987) maintained that people set boundaries within their objective worlds. Provided that they view the things that fall within the boundaries as coherent, the person will have a strong SOC and will not be troubled by events happening outside of
these boundaries. Therefore, even though an individual have a strong SOC, he or she may not view his or her entire world as meaningful, comprehensible and manageable. The following section addresses the relationship between SOC and psychofortology.

### 4.3.3 Sense of Coherence and Psychofortology

Antonovsky (1987) stated that one can expect a positive relationship between SOC and psychofortology for two reasons: (a) that the SOC is generative of good health and health has a positive influence on global estimates of one’s sense of well-being thus indirectly relating the two, and (b) many GRRs promoting a strong SOC are also related to psychofortology.

Wissing and Van Eeden (1997) conducted a South African study which supported Antonovsky’s (1993) findings of positive correlations of the SOC with indices of psychological well-being, such as internal locus of control, self-esteem, hardiness, general well-being, quality of life, problem-focused coping, and stamina. Sense of coherence and sense of coherence research in relation to infertility is discussed next.

### 4.3.4 Sense of Coherence, Infertility and Related Research

As seen from the above discussions much research with regards to SOC has been done in the field of stress and coping. It can be said that the SOC has proven to be a useful tool in understanding how individuals cope with stressful life events at the onset of a chronic illness such as infertility. A literature review indicated that very little research has been done looking at the sense of coherence and patients undergoing infertility treatment. However, some exploration has been done on gender differences in infertility patients with regards to the sense of coherence. According to Schmidt, Boivin, Tjornhoj-Thomsen, Blaabjerg, Hald, Rasmussen & Nyboe Andersen (2003) no sex differences in the evaluation of treatment were found except that women were more satisfied than men with how staff performed medical examinations. Furthermore patients relate satisfaction with life positively with a treatment-related pregnancy or delivery (Schmidt et al., 2003). Although it was evident during the literature review of this study that there have been numerous studies done on the SOC and chronic illness, few studies investigated SOC and patients undergoing infertility treatment specifically.
Madhoo (1999) investigated the SOC and coping resources of patients in cardiac rehabilitation. It was found that the participants in this study showed a high mean SOC score of 159.0. This is significantly higher than the mean of 136.52 calculated for heterogeneous South African groups (Wissing & Van Eeden, 1997). The results of this study are useful in terms of comparison with the current study. Even though cardiac patients were the subjects of the study, rather than infertility patients, the similarity rests in that all individuals were dealing with a chronic illness that may be perceived as a stressful life event with possible lasting consequences on one’s life.

Furthermore, research shows that finding meaning in life experiences is psychologically beneficial, and can also be associated with less rapid course of illness. In a study done by Taylor, Kemeny, Reed, Bower and Gruenewald (2000) on HIV-infected bereaved men, they found that those men who were able to find meaning in the bereavement experience maintained levels of their CD4 T-helper cells over a follow-up period of two to three years. It was thus concluded that the ability to take an experience that is tragic and distressing and to find personal lessons in the experience can help the person to live the remainder of his/her life with an enhanced sense of purpose and appreciation for the value of life.

During a literature review no completed research studies on sense of coherence and infertility treatment in the South African Context was found. However, Waddington (2005) conducted a research study that explored the influence of personality type and sense of coherence on coping with bereavement. The results of this study can be regarded as valuable to the researcher as the emotions associated with infertility treatment closely relates to that of a person experiencing bereavement. Waddington (2005) found that individuals that cope with bereavement seem to have higher levels of sense of coherence than non-coping individuals. Other studies conducted within the South African academic milieu include that of Jansen (2006) who explored the relationship between emotional intelligence, sense of coherence, optimism, affect and life satisfaction of students at North-West University. Law (2005), who hails from the North-West University, researched emotional intelligence, sense of coherence and coping behaviour. Nortier (1999) a Stellenbosch University graduate researched the relationship between ego development and sense of coherence, while Greeff (1995) looked at the characteristics of
well functioning families. Naidu (2003) conducted a research study exploring the relationship between sense of coherence and stress at the University of Natal. Finally, Bayne (2001) looked at the relationship between individualism/collectivism, locus of control and sense of coherence at the University of Johannesburg.

4.4 Conclusion

As interest in the field of stress, coping and health has grown and received much attention by researchers many useful contributions have been made. However, much of this research has been within the pathogenic paradigm and has had a pathogenic focus. This chapter has made an attempt to link the concepts of stress, coping and coping resources in order to highlight the growing body of research that has begun to explore the origins of health rather than disease. As a result this focus on health, also known as fortology, has allowed researchers to bring about many rich and useful insights into how individuals manage stress and stay well. Consequently, in Chapter 4, the constructs from this fortological framework, namely the sense of coherence and coping resources have been the main focus of discussion.

However, for the purposes of this study, the broader composite of psychofortology names the construct “subjective well-being” and deserves to be given attention. As a result the following chapter is devoted to the construct of subjective well-being which is comprised of the concepts satisfaction with life and happiness.
CHAPTER 5

SUBJECTIVE WELL-BEING

“The often incidental effect of experiencing a positive emotion is an increment in durable personal resources that can be drawn on later in other contexts and in other emotional states”

(Barbara Frederickson, 1998). 6

5.0 Introduction

According to Diener (2000), research over the past 10 years into the construct of subjective well-being has increased significantly as psychologists are becoming more interested in the positive side of psychological well-being. Psychologists have begun to examine the causes and consequences of happiness, self-esteem, optimism and other indicators of well-being instead of concentrating on the factors that lead to disease and psychological disorder (Lucas, Diener & Suh, 1996; Seligman & Csikszentmihalyi, 2000). Diener (2000) conducted research that showed that people are becoming increasingly more concerned with happiness and fulfilment. In this chapter, theory and research in the area of subjective well-being is reviewed, with specific focus on satisfaction with life and life happiness. Different related topics of subjective well-being are also highlighted by looking at various variables such as gender and the effect of life events on subjective well-being.

5.1 Subjective Well-Being Defined

Many disciplines refer to subjective well-being and it can thus be described in various different terms namely; happiness, objective and subjective well-being, quality of life, and life satisfaction. Diener, Lucas, Smith and Suh (1999) found in their research that subjective well-being includes four different components, namely: (a) pleasant affect (e.g., pleasant emotions and mood), (b) the relative absence of unpleasant affect (e.g., anger, anxiety and depression), (c) life satisfaction, and (d) satisfaction with life domains (e.g., marriage, work, income, housing, leisure and health). High subjective well-being

6 In Compton (2005, p.23)
was described by Myers and Diener (1995) as: “Frequent positive affect, infrequent negative affect, and a global sense of satisfaction with life” (p.10).

According to Diener (1984), the concept of subjective well-being has three foundational characteristics. Firstly, it is a subjective appraisal made by an individual where status is given to one’s own life based on perception. Secondly, subjective well-being places the focus on positive measures (e.g., satisfaction with life in addition to absence of negative factors such as depression). Lastly, these measures offer a global assessment of all facets of a person’s life.

Although there is no complete definition of subjective well-being (Diener, 1994), two broad aspects of subjective well-being have been identified through research: (a) an affective component which can further be divided into pleasant and unpleasant affect and (b) a cognitive component which is also known as life satisfaction (Diener, 2000). Subjective well-being can thus be described as a broad term consisting of an individual’s evaluative reactions to his or her life in terms of life satisfaction or affect (Diener & Diener, 1995).

Furthermore, Diener (1994) reported that a person’s experience of well-being remains relatively stable across various situations and across time. He stated that although an individual’s emotions may fluctuate in response to different situations, they eventually adapt to these changes and return to their original level of emotions over time. Subjective well-being is a broad category of phenomena that includes people’s emotional responses, domain satisfactions as well as global judgement of satisfaction with life. Studies that aim to identify the causes, predictors and consequences of happiness and satisfaction with life are identified as studies of subjective well-being, with satisfaction with life as the global judgement about the acceptability of a person’s life (Compton, 2005). Thus, Diener (2000) defined subjective well-being as a person’s evaluation of his/her own life.

Diener, Lucas, Smith and Suh (1999) reported that since research into subjective well-being focus on long term moods rather than momentary emotions the research should include measures of unpleasant affect which includes emotions such as worry, anxiety and depression which cannot be diagnosed on a clinical level but still detracts from the individual’s overall sense of well-being. According to Diener (1994), people with low levels of subjective well-being experience their circumstances as well as their lives as
undesirable and thus present with unpleasant emotions such as anxiety, anger and depression. Furthermore, Lewinsohn, Render and Seeley (1991) stated that low levels of subjective well-being could both be experienced on an interpersonal and an intrapersonal level. At the interpersonal level, a greater number of stressors are experienced together with a range of negative cognitive and emotional patterns. At the intrapersonal level, low levels of subjective well-being is characterised by reduced participation and enjoyment in pleasant activities as well as a reduced level of motivation.

Compton (2005) reported that subjective well-being is related to three components: (a) judgement, (b) cognitive processes, and (c) neuroticism. Utilising these three components as a base, Compton reported that high levels of subjective well-being on the other hand occurred when people reported feeling very happy, satisfied with their lives and when they were experiencing low levels of neuroticism. In addition, Diener (2000) concluded that temperament and personality appear to be powerful factors that influence subjective well-being. Predictors of subjective well-being is discussed in the section that follows.

5.2 Predictors of Subjective Well-Being

Diener, Oishi and Lucas (2003) grouped theories of subjective well-being into three categories, namely: (a) need and goal satisfaction theories, (b) process or activity theories, and (c) genetic and personality disposition theories. Need and goal theorists suggest that subjective well-being is achieved through the striving of an individual for the attainment of certain goals. Goal-setting and its effects on subjective well-being will be discussed as a subsequent section in this chapter on subjective well-being. Process or activity theorists suggest that individuals are happy as long as they are actively engaging in meaningful activities. Lastly, the genetic and personality disposition theorists state that subjective well-being is dependent upon one’s genetic heritage in the sense that some individuals are born with a predisposition to being more happy, while others are more prone to being unhappy (Diener, Oishi & Lucas, 2003).

Diener, Larsen and Emmons (1984) found that subjective well-being is relatively stable over time and while affect may vary across time people adapt to these changes and return to their previous levels of subjective well-being. Diener, Oishi and Lucas (2003) found that the two personality traits most closely related to subjective well-being are
extroversion and neuroticism. It can thus be said that an individual who is extroverted and has low levels of neuroticism, will have high levels of subjective well-being.

According to Diener (1984) happiness and satisfaction depend on the sum of many smaller pleasures and happy moments. This perspective of subjective well-being is known as the ‘bottom-up theory’ and implies that well-being is a summation of the positive experiences in a person’s life. On the other hand Diener (1984) termed a top-down theory which is concerned with an individual’s manner of evaluating and interpreting experiences in a positive way. Variables associated with this specific approach include experiences of elation, joy, contentment, ecstasy and happiness (Diener, Lucas, Smith & Suh, 1999). Diener (2000) termed these pleasant affect, which then formed part of an affective or positive component leading towards greater subjective well-being. This perspective according to Compton (2005) assumes that people create their perception or self-ratings of subjective well-being by summarising a range of external circumstances and then making a judgement. The more frequent the pleasant moments such as marriage, how satisfied one’s job is, or amount of income, the happier the person will be. This theory is supported by research done by Diener and Biswas-Diener (2002) who found during their research of cross-national studies that people living in more impoverished countries report lower levels of subjective well-being. This implies that external circumstances thus matter.

On the other hand there is an approach to subjective well-being known as the ‘top-down theory’. This perspective postulates that subjective well-being is more related to a general tendency to evaluate and interpret experiences in a positive way (Compton, 2005). This perspective states that a person tends toward positivity when encountering specific life situations. The top-down theory is supported by studies that have found that certain personality traits, attitudes, and self-perceptions are highly correlated with self-reported subjective well-being (DeNeve & Cooper, 1998; Diener & Lucas, 1999).

Diener, Larson and Emmons (1984) compared the top-down and bottom-up approaches during a research study and found that 52 percent of the variation in happiness scores was a result of personality while only 23 percent was due to a summary of situational events. Thus, while studies strongly suggest that both personality and situations are important, personality appears to be the most important factor in measuring
subjective well-being. However, further analysis done suggests that life is more complicated than this simple conclusion. These further investigations into happiness and satisfaction with life found a number of variables that are reliably associated with life happiness and satisfaction with life.

The seven core variables that best predict happiness and satisfaction with life in Western individualized cultures (Argyle, 1987; Diener, Lucas, Smith & Suh, 1999; Myers, 1992) include: (a) positive self-esteem, (b) sense of perceived control, (c) extroversion, (d) optimism, (e) positive social relationships, (f) sense of meaning and purpose to life, and (g) resolution of inner conflicts or low neuroticism. These seven variables will be described in greater depth below.

5.2.1 Positive Self-Esteem

According to Campbell (1981) self-esteem was found to be the most important predictor of subjective well-being. Positive self-esteem according to Compton (2005) is associated with adaptive functioning in almost every area of life. Research found positive self-esteem to be associated with less delinquency, greater anger control, greater intimacy and satisfaction in relationships, more ability to care for others, and a heightened capacity for creative and productive work (Hoyle, Kernis, Leary & Baldwin, 1999). High self-esteem is believed to provide an individual with a number of advantages such as a sense of meaning and value in life. Ryan and Deci (2000) indicated that a healthy self-esteem also is a helpful guide to negotiating interpersonal relationships as well as a natural by-product of healthy personal growth. Compton (2005) states that the development and maintenance of self-esteem is a complex process that is sensitive to a number of internal and external variables.
5.2.2 Sense of Perceived Control

According to Compton (2005) the sense of perceived control refers to the belief that one has some measure of control over events in life that are viewed as personally important. It is believed that without this sense of control life can become chaotic and full of random events that people would find to be distressing. Ryan and Deci (2000) stated that the need for perceived control may be an innate need. According to Compton (2005) this does not imply that an individual needs complete control over events in his or her life as this then becomes a desire for absolute power that can also be destructive to one’s well-being.

Traditionally this sense of perceived control is termed locus of control, where an internal locus of control is desirable and tends to attribute outcomes to self-directed efforts (Compton, 2005). A person with a strong internal locus of control tends to attribute outcomes to self-directed efforts rather than to external factors or chance (Compton, 2005). Many researchers now see this factor as a sense of personal control. Peterson (1999) defines personal control as “the individual’s belief that he or she can behave in ways that maximize good outcomes and/or minimize bad outcomes” (p.288). Furthermore, a sense of personal control “encourages emotional, motivational, behavioural, and physiological vigour in the face of demands” (Peterson & Stunkard, 1989, p.290).

According to Compton (2005) the core of personal control is the belief that one can interact with the world in order to maximize good outcomes or minimize bad outcomes, or both (Peterson & Stunkard, 1989). This belief takes the form of how a person can influence events, choose among outcomes, cope with the consequences of choices, and understand and interpret the results of choices made. In other words personal control runs the whole gamut: from beliefs and expectations to making actual choices, dealing with the consequences of choices, and finding meaning as we reflect on the entire process. Personal control is also viewed as a transactional process, implying that it is not just a trait but a dynamic relationship between a person and his/her environment as well. Each is said to influence the other in complex patterns of mutual influence (Compton, 2005).
5.2.3 Extroversion

An extroverted person is one who is interested in things outside him- or herself, such as physical and social environments, and is oriented to the world of experiences external to the self (Compton, 2005). According to Diener, Lucas, Smith and Suh (1999) various studies have found extraversion to be one of the most important predictors of subjective well-being. Extraversion has been shown to predict levels of happiness up to thirty years from initial testing (McCrea & Costa, 1986). In addition, some studies reported correlations of .80 between extraversion and self-reported happiness (Fujita, 1991).

Research studies hypothesised that the sociability component of extraversion was the one that most related it to well-being (Bradburn, 1969). This was reinforced by studies done by Okun, Stock, Harring and Witter (1984) who found that the number of friends a person has is related to his or her well-being. Pavot, Diener and Fujita (1990) believed that because more sociable people have greater opportunities for positive relations with others as well as more opportunities for positive feedback about themselves from others, this would relate into a sense of greater well-being. However, recent studies have found that extroverts did not spend more time with people than introverts, but extroverts seemed happier than introverts even when spending time alone (Pavot, Diener & Fujita, 1990).

Rusting and Larsen (1998) suggested that extroverts tend to report greater levels of happiness as they are born with greater sensitivity to positive rewards. Larsen and Ketelaar (1991) predicted that this heightened levels of happiness might be due to an extrovert’s stronger reaction to pleasant events. Furthermore, Lucas, Diener, Grob, Suh and Shao (2000) indicated that it may also be that extroverts report greater well-being because they have a predisposition to experience positive emotions. This, according to Compton (2005), leads to an event being encoded positively and then later recalled as a positive memory. Extroverts may also report higher levels of happiness as they are more likely to find social situations stimulating and comfortable (Moskowitz & Cote, 1995).
5.2.4 Optimism

According to Diener, Lucas, Smith and Suh (1999) people who are more optimistic about the future report being happier and more satisfied with life. Scheier and Carver (1985; 1992) found that optimism even has an impact on one’s perceived physical health status such that people who are more optimistic report fewer health problems. Research has also found that individuals who have expectations for positive outcome in the future not only enhance mood but also allows for better coping strategies when under stress.

Optimism has been viewed and defined in various ways (Peterson, 2000). Scheier and Carver (1987; 1992) viewed it as ‘dispositional optimism’ or the global expectation that things will turn out well in the future. Snyder (1994) indicated that it can also be viewed as ‘hope’, or the belief that one’s actions and perseverance will allow goals to be achieved. Finally, Seligman (1990) viewed optimism as an ‘explanatory style’ or a way in which people explain the causes of events for themselves. For instance, Seligman (1990) proposed that people can learn to be more optimistic by paying more attention to how they explain a specific event in life to themselves. He referred to this way of thinking as learned optimism.

Schneider (2001) proposed an alternative to learned optimism that she called realistic optimism. According to Schneider, realistic optimism is optimistic thinking that does not depart from reality:

Realistic optimism relies on regular reality checks to update assessments of progress, fine-tune one’s understanding of potential opportunities, refine casual models of situations, and re-evaluate planned next steps. This involves attention to both environmental and social feedback about whether beliefs fall outside the range of plausible (positive) possibilities. (p.257)

Realistic optimism is an honest recognition that there may be opportunities for positive growth or learning experiences in even the most difficult situation. Even though there is no clear definition or way of looking at optimism it is believed that people who have a more positive outlook report greater levels of happiness and satisfaction with life. However, as optimism is a belief it can also be a false belief. For example, most people believe their own risk for developing chronic illness such as heart disease, cancer or
infertility is much lower than their statistical risk for this event to occur (Weinstein, 1980).

### 5.2.5 Positive Social Relationships

The presence of positive social relationships is also seen as an important predictor of subjective well-being (Diener, Lucas, Smith & Suh, 1999; Myers, 2000). Compton (2005) reported that the perception of being in a supportive social relationship is related to high self-esteem, successful coping, better health, and fewer psychological deficits.

According to Compton (2005) there are two related aspects to having positive social relationships, namely: (a) social support and (b) emotional intimacy. Compton reported that people most wanted to be with others when they were happy, thus a feeling of happiness may increase social contact. As social contact or support has been found to increase well-being, Compton suggested that positive social relationships and subjective well-being seem to be directly related to one another.

### 5.2.6 Sense of Meaning and Purpose to Life

Compton (2005) suggested that having a sense of meaning and purpose in life is an important indicator of higher subjective well-being. Myers (1992; 2000) indicated that this sense of meaning has often been measured as religiosity in research studies conducted. These research studies found that people who report greater religious faith, greater importance of religion to their lives, and more frequent attendance at religious services reported greater well-being. It seems that the increase of well-being as a result of religious activities can be ascribed to the fact that religion provides a sense of meaning for people. Religion also provides social support and enhanced self-esteem through a self-verification process as the person associates with others who share his or her values. However, according to Compton (2005) as well as McGregor and Little (1998), a sense of meaning and purpose in life need not be tied to religious beliefs.
5.2.7 Resolution of Inner Conflicts or Low Neuroticism

The third most important predictor of subjective well-being is the “inverse relationship with negative emotionality and neuroticism: the less neuroticism the higher the subjective well-being” (Compton, 2005, p.53). Donahue, Robins, Roberts and John (1993) found that the less fragmentation there is in the self and the more coherence there is among aspects of the self-system, the higher a person’s perceived subjective well-being. Thus this predictor of subjective well-being can better be described with the term ‘personality integration’.

Traits related to subjective well-being seem to tap into both social interactions and personal characteristics (Compton, 2005). According to Compton (2005) personality integration implies a better coordination between aspects of the self as well as a greater tolerance for different aspects of one’s personality. It can also be predicted that greater personality integration can be associated with higher self-esteem, greater optimism, an internal locus of control, and better social relationships. Lower neuroticism and better self integration also allows for a personality factor that may operate while people are still striving to reach their goals, and it may also increase resiliency of the self (Compton, 2005). However, caution should be taken in these findings as Suh (1999) suggested that these findings may only be applicable in individualistic cultures or in individuals who value autonomy and individualism.

Happier people tend to have better social relationships and seem to be prone to being more extroverted. This way of relating to the world is mutually reinforcing as the manner in which the positive individual represents himself of herself to the world results in a positive reaction from others and so reinforce the individual’s self-esteem. According to Compton (2005) this cycle produces a sense of meaning and purpose in life as it leads an individual to a belief that life is predictable and meaningful. Compton (2005) reinforced this by saying: “We are engaged in a social world, both creators of our own social reality, and as products of the social reality we are embedded in” (p.65).

This section addressed a number of theoretical approaches and predictive variables to subjective well-being. Diener (2000) further found that people’s values and goals seemed to be intimately tied to what events they perceived as good and bad. Therefore a hypothesis that stems from this finding is that goal change is an inherent component of
adaptation. It is with this in mind that goal-setting and well-being is discussed in the next section.

5.3 Goal-Setting and Well-Being

According to Compton (2005) positive psychology links with goal setting in that the achievement of goals leads to increased happiness and thus an overall increase in well-being. Compton (2005) stated that goals are extremely important to an individual’s positive emotional state at any given point in time as well as to their general emotional well-being. People tend to pursue goals in life that facilitate affiliation, intimacy, self-acceptance and community involvement as it increases subjective well-being (Kasser & Ryan, 1993). Emmons (1992) further suggested that it is best to find a balance between specific and abstract goals set by setting definite concrete behavioural short-term goals that are directly linked to more abstract and meaningful long-term goals.

Hsee and Abelson (1992) found the rate at which people approach their goals to be important; they explained that this is because adequate or even better than adequate progress translates into higher level of well-being. According to Compton (2005) subjective well-being is also affected by the relationship amongst an individual’s goals. Greater subjective well-being is thus linked with more congruence amongst different goals and less internal conflict between competing or opposing goals.

Compton (2005) furthermore reported that well-being is enhanced through seeking goals that are associated with positive relationships and helping others, while self-centred goals have a negative effect on one’s well-being. Goals that motivate us towards something are better known as approach-goals. It is these approach-goals that are more likely to be associated with subjective well-being than are avoidance-goals, which aims to avoid difficulties, dangers and fears (Compton, 2005). According to Compton the difference in outcome found between approach- and avoidance-goals depends largely on one’s cultural orientation since studies suggest that approach goals are more central to people living within individualistic cultures. Diener, Oishi and Lucas (2003) reported that in more socially orientated cultures there is a tendency towards avoiding failure since failure reflects on family as well as on the individual themselves.
Research done by Compton (2005) reported that whether people are motivated to pursue their goals is largely governed by an individual’s expectation of hope for attaining the goals set. Hope theory suggests that hope is the result of two processes, namely: (a) pathways which can be explained as one’s believe that one has the ability to reach their desired goals, and (b) agency which implies that one believes that one can become motivated enough to pursue those goals (Snyder, Randt & Sigmon, 2002).

According to Cantor and Sanderson (1999) one of the core reasons that goal pursuit is associated with well-being is because it implies that people are being active participants in their lives. Cantor and Sanderson (1999), as other goal theorists, believed that greater well-being is found by means of participation in activities that are intrinsically motivated, freely chosen, desired, and involve realistic and feasible goals. More recent theories of motivation in positive psychology view individuals as actively more involved in “seeking out intrinsically satisfying experiences and engaged in a process of continuous development centered on needs of competence, relatedness, autonomy and hopeful expectations for the future” (Compton, 2005, p.39).

Emmons (1986) suggested that a group of smaller goals that revolve around a common theme can be clustered together and labelled as personal strivings. According to Emmons (1992) meaningful and successful personal strivings are an even stronger predictor of subjective well-being than specific personality traits.

This section highlighted the relationship between positive psychology, hope and goal-setting and the influences that these constructs have on one’s overall sense of well-being. The following section discusses the role that gender plays in one’s sense of subjective well-being.

### 5.4 Gender and Subjective Well-Being

According to Compton (2005) studies done in the area of gender and subjective well-being have sought to find possible answers as to whether gender plays a role in the overall well-being of an individual. Compton’s research review concluded that there are no significant differences between men and woman in self-reported happiness or life satisfaction (Lu, 2000; Nolen-Hoeksema & Rusting, 1999). During an analysis done to try and cast some light on the inconsistency in research findings regarding gender and
subjective well-being, Wood, Rhodes and Whelan (1989) found that women generally report slightly higher levels of happiness than men. Diener, Sandvik and Larsen (1985c) indicated that, although there were no major differences between the subjective well-being of men and women, there were clear differences in the range of emotional intensity displayed between the two groups. Results indicated that women showed emotions more intensely, which led the researchers to postulate that men were culturally expected to be less emotional.

Furthermore, Lu (2000) found that there were significant gender differences for specific facets of the subjective well-being construct. On the quantitative aspect, women were found to be more satisfied than men with their social relations and daily lives. Lu, Shin, Lin and Ju (1997) also found that women showed greater variance in the distribution of happiness scores than did men.

According to Compton (2005) there may be differences between the subjective well-being of men and women as they move through their various life stages. In a study done by Argyle (1999) which considered both gender and age at the same time, it was found that older women tended to be less happy than older men. Men’s happiness ratings tended to increase as they aged, while women’s happiness ratings increase up to the age of 25 years, showing a dip in happiness from age 25 to 35, and then their happiness ratings follow a steady increase as they grow older (Mroczek & Kolarz, 1998).

Argyle (1987) indicated that there was a difference in the perceived sources of happiness and satisfaction for men and women. He found that women indicated that their source for increased happiness was found in harmonious interpersonal relationships, especially those involving family members, while men derived greater happiness from material pursuits and career success. Argyle’s study’s findings correlated well with the findings based on gender role theories done by Baken (1966).

According to Braun (1977) women reported greater negative affect than men, however they also seemed to experience greater joys. This implies that there is very little difference of global happiness and satisfaction with life found between the two sexes (Goodstein, Zautra & Goodhart, 1982). Nolen-Hoeksema and Rusting (1999) indicated that the impact of gender accounts for only one percent of the variability in overall subjective well-being among people. Compton (2005) thus stated that neither gender
inevitably doomed to be less happy than the other. The effect that a life event such as infertility treatment has on an individual’s subjective well-being is discussed next.

5.5 The Effect of Life Events on Subjective Well-Being

Due to decades spent focusing on pathology rather than fortology the negative events experienced by individuals have received a great amount of attention in research. The focus on these negative events can also be linked to the threatening potential impact they may have on the well-being of an individual. Research has found that an individual’s cognitive interpretive style and personality traits can mediate the way in which stressful life events are experienced (Suh, Diener & Fujita, 1996).

Eronen and Numri (1999) reported that individuals who experience many positive and limited negative life events showed high levels of global well-being and adaptive strategies, while those individuals who were faced with many negative and limited positive life events reported lowered levels of overall well-being and self-preserving strategies. The pattern of life events was also found to influence well-being in the future of an individual. However, Costa, McCrea and Zonderman (1987) found that life events as well as important life changes did not have a significant influence on subjective well-being over longer periods of time such as 10 years for example.

According to Warr, Barter and Brownbridge (1983) good events are directly related to an increase in positive affect, while bad events are directly related to an increase in negative affect. Researchers such as Dohrenwend and Dohrenwend (1974) tried to establish the psychological consequences and coping skills utilized by life events that are perceived as ‘exogenous shocks’ by most individuals. Reich and Zautra (1983) found some evidence that the impact made on an individual by a stressful life event governs that individual’s ability to take action or control the event. Thus even pleasant events can influence one’s global subjective well-being negatively if they are perceived as being out of the individual’s control (Diener, 1984).

A dynamic equilibrium model was presented by Headey and Wearing (1989), which described a person as naturally being in a state of ‘neutral’ or ‘normal’ equilibrium with regards to life events and global well-being. Events perceived as positive or negative by an individual can cause the equilibrium levels of subjective well-being to deviate from
the ‘neutral’ or ‘normal’ position. Perceived positive events increase subjective well-being while unexpected negative events depress one’s levels of subjective well-being.

Research conducted found that happy people reported more positive life events and fewer negative life experiences than unhappy people (Seidlitz & Diener, 1993). The researchers suggested that the difference in reports made by participants was due to two factors: (a) happy participants objectively experienced more positive as opposed to negative events than unhappy participants, and (b) happy participants interpreted their life circumstances more positively then unhappy participants. In addition, the difference in reports given may also be due to the fact that happy participants paid more attention to positive versus negative experiences at the time they occurred than unhappy participants and were therefore more likely to encode them into the memory (Seidlitz & Diener, 1993). Seidlitz and Diener explained that life events are organised in an individual’s memory according to their valence. This organisation then facilitates the recall of positive events in happy participants more than in unhappy individuals. Furthermore happy participants also tended to use strategies of retrieving events from memory that favoured the recall of positive rather than negative life events (Seidlitz & Diener, 1993).

Subjective well-being consist of satisfaction with life and life happiness. In the next section the researcher explores satisfaction with life in greater depth.

5.6 Satisfaction with Life

Life satisfaction refers to a judgemental process, in which individuals assess the quality of their lives on the basis of their own unique set of criteria (Pavot & Diener, 1993; Shin & Johnson, 1978). These judgements are dependent on a comparison of one’s circumstances with what is thought to be an appropriate standard as opposed to criteria judged as important by an external source. In other words the individual compares his or her life circumstances with self-imposed standards, and the degree to which his or her life situation fits these standards. Satisfaction with life thus is the result if a minor discrepancy is found (Diener, Lucas, Oishi, Solberg & Wirtz, 2002).

Life satisfaction also looks at an individual holistically and incorporates family life, working conditions, health and social security for example in determining life quality (Strack, Argyle & Shwarz, 1991). Life satisfaction can thus be described as a conscious
and cognitive judgemental process of the individual’s life (Compton, 2005; Diener, Emmons, Larson & Griffin, 1985a).

Life satisfaction can also be described as a characteristic of a person’s (a) social interaction, (b) activity, (c) thoughts, (d) self-concept, (e) typical strategies of handling stress, as well as (f) the evaluation of the individual’s own health (Strack, et al., 1991). Diener and Fujita (1997) found that social comparison can also affect satisfaction with life in an individual. Social Comparison is defined as: “the process of thinking about information concerning one or more people in relation to the self” (Woods, 1996, p.250). Furthermore, Diener and Fujita (1995) reported that economic and social indicators do not impact well-being of a society or individual significantly on their own.

Diener, Lucas, Oishi, Solberg and Wirtz (2002) suggested that desire also plays a significant role in one’s life satisfaction. They believed that desires are chronically salient because they are what people are trying to obtain, and thus are a standard that is likely to be available when making satisfaction judgements. However, little research examines the implication of desire attainment on one’s satisfaction with life. According to research studies conducted this is an important issue for several reasons, namely: (a) certain desires (e.g., to be popular) do not have a clear set of markers that signify attainment, (b) certain desires (e.g., to be as successful as possible) would seem to be self-perpetuating, with no clear end point, and (c) most important desires (e.g., to be rich) are long term in nature (Diener, Lucas, Oishi, Solberg & Wirtz, 2002). It is with this in mind that it can be concluded that people spend the vast majority of their lives having not obtained such desires. However, people yet report to be satisfied with their lives. Myers and Diener (1995) thus indicated that desire attainment per se might not be the most important factor in predicting subjective well-being.

Although there might be some agreement on what constitutes a high quality life or ‘the good life’, individuals are likely to assign different weights to different components (Diener, Emmons, Larson & Griffin, 1985a). It is thus important to assess an individual’s overall perception of his life rather than only satisfaction in a specific area. It was with this in mind that the Satisfaction of Life Scale (Diener, Emmons, Larson & Griffin, 1985a) was constructed.
This section introduced the construct satisfaction with life. The following section discusses the construct of happiness.

5.7 Happiness

Frederickson (2002) stated: “Given the suffering and loss that stem from negative emotions, the press to understand these emotions is immense” (In Strümpfer, 2006, p.145). According to Peterson and Park (2003) there is already a rich and diverse knowledge base concerning negative emotions. Frederickson (1998) noted that psychologists “have inadvertently marginalised emotions such as joy, interest, contentment and love, that share a pleasant subjective feel” by previously focusing on negative emotions in their theory building and research (p.300). She hypothesised that reasons for this lack in attention of positive emotions might be due to various reasons, namely: (a) positive emotions are few in number and rather diffuse, (b) positive emotions lack specific facial configurations, (c) positive emotions lack distinguishable autonomic responses, and (d) they show a great degree of blending in how they are subjectively experienced (Strümpfer, 2006).

According to Compton (2005), although there appears to be a broad consensus regarding the various dimensions of negative emotions there seems to be less clarity on what constitutes positive emotions. Research done by Watson (2002) proposed that there are three broad dimensions of positive emotion which will be present when one is happily absorbed in an activity that one is enjoying and performing well in. The three dimensions are: (a) joviality (e.g., happiness, cheerfulness and enthusiasm), (b) assurance (e.g., confidence and daring), and (c) attentiveness (e.g., alertness, concentration and determination).

The “Broad and Build” model was developed by Frederickson (1998) which states that certain discrete positive emotions such as joy, interest, contentment, pride, and love all share the ability to broaden one’s thought-action repertoires as well as to build their enduring personal resources, ranging from physical and intellectual resources to social and psychological resources. This implies that the purpose of positive emotion is significantly different to the purpose of the negative emotions. Furthermore, it also suggested that positive emotions facilitate the process whereby our options for future
resources are maximised. On the other hand it is believed that negative emotions lead an individual to narrow their opinions with regards to thought and behaviour (Compton, 2005). A classic example of this is how we make quick and impulsive decisions when under pressure or in threat instead of thinking a certain idea through before acting on it.

Life happiness can be described as both a ‘condition’ and a ‘characteristic’. Happiness as a condition relates to a varying state of mind while as a characteristic happiness is of a more permanent nature. Snyder and Lopez (2005) divided happiness theories into three distinct groups, namely: (a) need and goal satisfaction theories, (b) process and activity theories, and (c) genetic and personality predisposition theories. Need and goal satisfaction theories suggests that reducing tension within an individual will lead to happiness, while movement towards a set of goals might facilitate an individual in attaining subjective well-being. Happiness therefore can be described as a desired end state to which all individual activity is directed (Snyders & Lopez, 2005).

Veenhoven (1994) defined happiness as the degree to which an individual positively evaluates the overall quality of his or her life. The researcher identified two components of happiness within this concept. The first component is the ‘hedonic’ level of affect, which implies the degree to which pleasant affective experiences usually outbalance unpleasant experiences. The second component is called ‘contentment’ and refers to the degree to which the individual perceives his or her wants to have been met. These components represent the ‘affective’ and ‘cognitive’ appraisals of life respectively and are regarded as sub-totals in the overall evaluation of life, namely overall happiness.

According to Andrew and Withey (1976) happiness constitutes three components: (a) positive emotion, (b) life satisfaction and the absence of negative emotions or psychological distress, and (c) happiness which is said to be the positive judgement outcome when a individual weighs up the positive and negative affects and is considered to be the harmonious satisfaction of one’s desires and goals (Diener, 1984; Hatuell, 2004). Hatuell noted in her study that happy individuals are likely to experience more desirable events as well as have the propensity to interpret and recall ambiguous events in a positive light.
According to Compton (2005), when researchers investigate people’s level of happiness, they are seeking individuals’ report of their emotional state as well as how they feel about the world and themselves in general. Myers and Diener (1995) further found that happiness positively correlates with the following predictable aspects: (a) a positive self-concept, (b) an internal locus of control, (c) extroversion, (d) intimate interpersonal relationships, (e) religiosity, (f) the ability to enjoy life’s special moments, (g) positive working circumstances, and (h) positive recreational activities.

According to Lu and Shih (1997) happiness can be defined as an internal experience of a positive state of mind which can be brought on in various ways. Happy people or people with a high level of subjective well-being are more likely to experience neutral events as being positive, these individuals also appear happier to their friends and family (Lyubomirsky & Ross, 1997; Seidlitz & Diener, 1993). Steel and Ones (2002) found external causes, life’s hardships and pleasures, to have a considerable although interestingly, not enduring, effect on one’s subjective well-being.

Seligman (2002) suggested that an individual needs to find his fundamental strengths and use them on a daily basis; he termed this idea as ‘authentic happiness’. He suggested that these fundamental strengths would become identifiable positive character traits of the individual over time. Compton (2005) suggested that “a hedonic focus on positive emotions is combined with a eudemonic focus on virtues and personal growth in order to produce authentic happiness” (p.173). Seligman (2002) identified six principles of authentic happiness, namely:

1. Everyone benefits which implies that authentically happy people approach life with an “everybody wins” strategy.
2. Savouring success, meaning that authentically happy people tap into past successes when dealing with problems in the present, as well as they savour successes in the present.
3. Social intelligence which goes by the principle that authentically happy people know which strengths to utilise and which to avoid in a specific circumstance.
4. Opening doors, implying that authentically happy people see opportunities or ‘open doors’ when others might see loss of opportunity or ‘closed doors’.
5. Strength in couples, this suggests that authentically happy people thrive in romantic relationships and see strength in their union.

6. Finding meaning which indicates that authentically happy people derive meaning from life and leave an imprint of their passing.

Diener and Fujita (1995) found that women are traditionally more concerned with social affairs while men are more concerned with achievement and power. Nolen-Hoeksema and Rusting (1999) reviewed a number of potential explanations and concluded that the difference comes mainly from socially prescribed gender roles. The traditional female gender role includes greater care giving responsibilities which may encourage more emotional responsiveness in women than in men. As a result women may be more willing to experience and express emotions of happiness.

Research studies investigated whether it is the intensity or the frequency of positive feelings which produces happiness. Diener, Larsen, Levine and Emmons (1985b) found that both intensity and frequency make valuable independent contributions to one’s happiness. They also found that the intensity of positive and negative emotions is experienced with equal intensity within an individual. Argyle (1999) however found that younger people and women reported feeling emotions more intensely.

At an affect level, people that describe themselves as having high levels of subjective well-being mainly feel pleasant emotions which are largely due to their ongoing positive appraisal of life events and their environment in general. However, people with low levels of subjective well-being experience their life circumstances and events as undesirable; thus they experience unpleasant emotions such as anxiety, depression and anger (Myers & Diener, 1995).

Happy people according to Compton (2005) seemed to be healthier, more successful and socially more engaged. This causality has emerged in the last few years and research has shown that happiness brings many benefits other than merely feeling good about oneself (Seligman & Steen, 2005). As mentioned earlier in this chapter it is not merely the events that take place in an individual’s life that are responsible for happiness or unhappiness, but rather how these events are interpreted by an individual (Compton, 2005). Compton also stated that by maintaining consistent patterns of positive interpretation stable ways of relating to the world are established. By establishing these
stable patterns one would create personality traits such as ‘cheerfulness’ and ‘optimism’ which are all predictors of one’s global subjective well-being. Another advantage of positive emotion, according to Frederickson (1998), is that it may act as an antidote to the effects of negative emotion. Frederickson thus developed an ‘undoing hypothesis’ which states that positive emotions help the mind and body to regain a sense of balance, flexibility, and equilibrium after experiencing negative emotions for a certain time period.

In order to establish the state of happiness and satisfaction with life, that was discussed above, of the males and females in this study, it was necessary to make use of standardized measures. The Affectometer-2 Scale, developed by Kamman and Flett (1983) and the Satisfaction with Life Scale, developed by Diener, Emmons, Larsen and Griffin (1985a), were utilised in order to measure each individual’s current level of general emotional and cognitive well-being.

5.8 Local/South African Research Studies on Subjective Well-Being

In South Africa, Wissing and Van Eeden (1997) conducted various research studies looking at psychological well-being. They also offered a fortigenic conceptualization and empirical clarification on this topic. Another pioneer in the South African context is Strümpher (1993; 1995; 2001; 2005; 2006) who devoted his time towards defining and researching psychofortology in depth.

Nationally there are many academic research studies on subjective well-being that is being undertaken. Completed research studies include that of Parker (1986) who conducted a phenomenological study of happiness at Rhodes University. Jansen (2006) looked at the relationship between emotional intelligence, sense of coherence, optimism and life satisfaction of students at North-West University while Bouma (2001) researched the psychofortology of the learning-impaired learner. Research on subjective well-being amongst learners at the Nelson Mandela Metropolitan University has also taken flight. Vorster (2002) researched the subjective well-being and purpose of life of the aged. Van der Walt (2002) conducted research into the subjective well-being and general health of stroke survivors. Kirsten (2003) conducted research into the psychofortology of female nurses, while Hatuell (2004) examined the subjective well-being and coping resources of overweight adults. Gal (2004) researched the subjective well-being and anxiety levels of
full-time employed married mothers while Smith (2006), lastly, researched the psychofortology of post-graduate learners in the Faculty of Health Sciences at the Nelson Mandela Metropolitan University. These researchers all contributed to the growing source of research in subjective well-being, thus allowing positive psychology to fulfil its desired role of exploring and developing optimal human health.

5.9 Conclusion

This chapter discussed subjective well-being as a broad category of phenomena, together with its related concepts and research studies. This chapter also focused on satisfaction with life as a cognitive component of subjective well-being and happiness as an emotional component of subjective well-being.

As seen during the discussion in this chapter research findings often differ concerning the impact of predictive variables on subjective well-being as an indicator of the absence of negative affect, or the presence thereof. It is this presence of negative affect that is believed to indicate lower levels of subjective well-being.

It is widely accepted that personality plays a significant role in the determination and continuation of subjective well-being. Therefore subjective well-being should be viewed as an internal process rather than an external one (Diener, Lucas, Smith & Suh, 1999; Suh, Diener & Fujita, 1996). In the following chapter a detailed description of the research design employed and the methodology used is given.

CHAPTER 6
6.0 Introduction

The preceding chapters have served to underpin the reasoning behind the present study. In Chapter 2 an overview of available literature on infertility was given in terms of its physiological and psychological components in order to better understand how these factors influence the psychosocial development of male and female patients undergoing infertility treatment. Chapter 3 provided an overview of the literature on psychosocial development as well as the positive psychology movement from which the psychosocial construct was born. Furthermore, theory and research concerning the psychosocial constructs of sense of coherence, coping resources, satisfaction with life and life happiness were reviewed in Chapters 4 and 5 respectively.

The present chapter provides an overview and description of the research design and methodology employed in this study. An outline of the aims of this study will be provided. Furthermore, a description of the biographical data that were obtained from the biographical questionnaire are presented in order to give a comprehensive understanding of the participating sample. This chapter also gives a clear understanding of how this particular study was carried out, including the research method utilized, the way in which participants were chosen, and the way in which the data were collected and analysed. Lastly, the ethical considerations which were taken into account during the study are reviewed.

6.1 Primary Aims of the Research

Although some research has been done on the extent to which infertility increases stress within a family system, very little research has been done to date to determine the psychological well-being or psychosocial development of an individual undergoing infertility treatment. It is with this in mind that this study aimed to explore and describe the psychosocial development of men and women undergoing infertility treatment. Psychosocial development was for the purposes of this study conceptualized as coping and subjective well-being. Coping was conceptualized as coping resources and sense of coherence while subjective
well-being was conceptualized as satisfaction with life and life happiness. This study thus aimed to explore and describe the sense of coherence, coping resources, satisfaction with life and life happiness of men and women undergoing infertility treatment at a privately managed health care unit in the Nelson Mandela Metropolitan area. These sub-constructs were decided upon and constitute the construct of psychofortology for the purposes of this study.

Therefore the present study’s primary aims were:

1. To explore and describe the coping resources of men and women undergoing infertility treatment.
2. To explore and describe the sense of coherence of men and women undergoing infertility treatment.
3. To explore and describe the satisfaction with life experienced by men and women undergoing infertility treatment.
4. To explore and describe the life happiness of men and women undergoing infertility treatment.
5. To compare the coping resources, sense of coherence, satisfaction with life and life happiness of males and females undergoing infertility treatment.

As this was an exploratory-descriptive study, no hypotheses were stated. Rather, the aims were used to guide the methodological aspects of the study. The next section discusses the research design employed.

**6.2 Research Design**

This study employed a quantitative, non-experimental, exploratory-descriptive research method, in which respondents were asked to complete self-report, survey-type questionnaires. This type of research design seeks to gather and analyze new data for novel information and emergent patterns (Mouton, 1996). Non-experimental research methods involve natural observation and no manipulation of variables, as was the case in this study (Neuman, 1997).
According to Babbie (1992), exploratory research is used when attempting to examine a new field of interest or if the field of research has not been exhausted. Exploratory research also aims to seek out new insights and assess phenomena from a different perspective; it also aids to gain familiarity with a phenomenon. The conclusions drawn are tentative and of value to this type of research in that it provides further research topics within the field of the present study (Babbie, 1992; Neuman, 1997). Exploratory descriptive research is therefore used to collect detailed information on the status quo, and to determine differences between variables. Exploratory research looks at attitudes, beliefs and opinions (Babbie, 1992; Neuman, 1997).

Descriptive research, which aims to portray accurate profiles of persons, events or objects, links closely to the purpose of the present study - to explore and describe - rather than to predict (De Vos, 2000). This was a survey type of descriptive design in that self-report measuring instruments were utilized (Cozby, 1993; McGuigan, 1993). A descriptive research method has the advantage that it provides a summary and description of a relatively large set of data (Van Lill & Grieve, 1994). Other advantages of exploratory descriptive survey type research include having increased flexibility when looking at complex relationships between variables and it is an effective and efficient way to collect large amounts of data about a problem. However, this does not necessarily mean that a casual relationship can be established but merely identifies whether a relationship exists or not (Schiller, 2000). Furthermore, some disadvantages of this type of research design are that there is: (a) no means to control extraneous variables, (b) no cause-and-effect conclusions can be drawn, and (c) the researcher is also not able to progressively investigate one aspect of the independent variable after another in order to come closer to the actual or real cause (Burns & Grove, 1993).

Descriptive research provides a representation of details of a situation, social setting, or relationship (Neuman, 1997) by using a number of descriptive methods such as: field observation, case studies, survey research and archival research (Cozby, 1993). For the purposes of the proposed study, a survey method was employed, involving the use of standardized pencil-and-paper questionnaires, to obtain data. Bailey (1987) confirmed that it is possible to obtain both valid and reliable information from participants through the use of self-completion questionnaires.
Respondents were asked to complete a biographical questionnaire as well as four self-reported, survey-type questionnaires. Two general survey procedures are typically used for data collection, namely questionnaires and interviews (Drew, Hardman & Hart, 1996). A questionnaire survey has two basic options, namely self-administration and investigator-administration. This study utilized the self-administration survey method in the form of standardized paper-and-pencil measures that were scored objectively in order to determine the sense of coherence, coping resources, satisfaction with life and life happiness of participants. According to Mitchell and Jolley (1996) survey research is the most common method used to tap into people’s beliefs, attitudes and behaviours. A survey characteristically has instructions on how to complete the questionnaire and presents a number of items or questions that may have forced response choices (close-ended questions) or open-ended questions (Fink & Kosecoff, 1998). The measures used during this study are representative of forced-choice questionnaires. It is believed that many survey-type questionnaires rely on this type of questioning as it has been proven to have high efficiency and reliability rates. Efficiency is established in that these type of questionnaires are easy to use, score and code for analysis, while reliability comes from the uniform data that is obtained as everyone responds in terms of the same options such as: always, often, sometimes and never (Fink & Kosecoff, 1998). Survey research is often used when exploring subjective states such as stress levels and coping ability (Cozby, 1993).

The non-experimental exploratory-descriptive survey design was chosen as an appropriate design in terms of this research study. The advantages of a survey self-report method includes: (a) the possibility of obtaining accurate results, (b) bias effects of the researcher is minimized, (c) participants have more privacy, and (d) there is a good possibility of obtaining accurate results as it is easy to use, score and code for analysis (Salkind, 1997). Participants are also able to provide the researcher with a measurement of their subjective states, attitudes and emotions when utilizing self-report questionnaires (Taylor, Peplau & Sears, 1997). Furthermore, survey methods prove to be useful when information is provided subjectively and comes straight from the respondent (Fink & Kosecoff, 1998).
Disadvantages of the survey method include the possibility that respondents might misunderstand items, leave out items or not complete or return the questionnaire (Dane, 1990; Mitchell & Jolley, 1996). Increased risk of a biased sample and researcher’s lack of environmental control add to the disadvantages of survey methods. Some of these disadvantages were overcome by participants completing questionnaires while waiting for their appointment; this helped to circumvent a possible lack of control over the environment in terms of unpredictable return rates and biased sampling. It also provided respondents with the opportunity to ask the research co-ordinator of the clinic questions if they did not understand a question completely. Response bias was minimized in the hope that the complete voluntary participation of patients in this study would have increased the possibility of participants responding truthfully and carefully. Research bias was further avoided as participants completed standard questionnaires that were identically worded (Bailey, 1987). However, there were some disadvantages to the survey method utilized in this research study that could not be avoided. As surveys are rigid comparability between questionnaires is possible. However, in this research study this rigidity resulted in a significant amount of information to be lost as the researcher could only analyze those feelings that the respondents were conscious of and willing to describe in response to the questionnaire. Furthermore, the survey method captured information at a specific point in time rather than capturing information over a significant period of time, thus it was not sensitive to fluctuations in a respondent’s feelings that may occur daily or weekly (Campbell, 1981). All of the above disadvantages were carefully considered and taken into account while analyzing the results yielded from this study. The sensitive nature of the topic and the participants’ need for high levels of confidentiality and privacy were also important factors that were considered carefully when determining the research design and method of the data collection phase.

In conclusion, the researcher decided that, when looking at the nature and aims of the current study, the disadvantages were outweighed by the appropriateness and advantages of this design for this research study. In the following section, an explanation of the participants and sampling methods used are discussed.
6.3 Participants and Sampling

There are two types of sampling procedures, namely: probability and non-probability sampling (Babbie & Mouton, 2001). A probability sample is selected by means of an objective method and it is possible to determine each individual’s chances of selection while non-probability sampling method takes less effort to ensure that the sample is an accurate representation of the population (Struwig & Stead, 2001). Non-probability sampling is convenient as it involves the selection of only those individuals who are willing and available to take part in the research study (Fink & Kosecoff, 1998). If a non-probability sampling method is utilized it can be said that the probability of any particular member of the population being chosen is unknown (Walsh, 2001).

The participants for this particular study were chosen by the researcher through the use of a non-probability purposive sampling procedure. The advantages of this type of sampling are that there is considerable savings in time, expenses, and complications, since the population used is easily accessed for research purposes (Struwig & Stead, 2001). A disadvantage is that it is difficult to estimate the degree of representivity of the population used (Bailey, 1987). Thus the use of non-probability sampling implies that less effort is taken to ensure that the sample is an accurate representation of the population as any individual who is not present at the time of sampling, for whatever reason, may be excluded from the study (Fink & Kosecoff, 1998). Therefore, it must be kept in mind that generalisability of the results of this study are not necessarily desirable nor applicable (Cozby, 1993).

The principle of selection in purposive sampling is based on the researcher’s judgement as to typicality or interest and a sample is built up which enables the researcher to satisfy the specific needs of the research study (Robson, 2002). This type of non-probability purposive sampling procedure involves the selection of cases in order to gain insight into the specific experiences which are being investigated (De Vos, 1998). Patton (1990, p.169) believed that “the logic and power of purposeful sampling lies in selecting information-rich cases for study in depth”.

In the case of this research project, all participants must have been on infertility treatment at the time of sampling in order to be considered information-rich cases. It is also this homogeneity in terms of their diagnosis of infertility that could assist in
neutralizing the negative effects of the disadvantages of the convenient sampling method on the research as a whole. The sample for this study consisted of male and female patients undergoing infertility treatment at a privately managed health care unit in the Nelson Mandela Metropolitan area. Due to the lack of generalisability of the results it is important to note that recommendations regarding the sense of coherence, coping resources, satisfaction with life and life happiness of men and women undergoing infertility treatment may only be applicable to the sample utilized during this research study. Participants were selected by a process known as “nominations” (Krueger, 1994, p.84). This involved the researcher asking neutral parties in a particular field - in this case the research co-ordinator of an Infertility and Wellness Clinic – to hand pick individuals who she thought would be suitable to participate in this research study.

Pertinent biographical information such as age, gender and type of infertility treatment experienced was gathered from participants through the administration of a biographical questionnaire (Appendix C). Although the participants’ first language was not one of the inclusion criteria, it was necessary for participants to be able to read and understand English at a Grade 10 level in order to be able to complete the questionnaires. Even though the inclusion of participants took place irrespective of culture and type of fertility treatment received, participants preferably needed to be 30 years of age and older as the sense of coherence, according to Sagy, Antonovsky and Adler (1990), crystallizes around 30 years. As mentioned in Chapter 4, age, parent-adolescent relationships and the stability of long standing commitments (e.g., spouse, children, community, etc.) in adulthood are all factors which affect the development of SOC (Antonovsky & Sagy, 1986). The participants of the current study were all married and at a stage where they have defined their identity in the community as a couple to the extent where they felt ready for children within their marital relationship. As described in Chapter 4, these are all factors contributing to the crystallization of an individual’s SOC. Furthermore, as a result of a limited amount of patients undergoing infertility treatment in the Nelson Mandela Metropole area, the researcher included participants between the ages of 25 and 29 years of age as it seemed from the above information that they might have developed a strong SOC at the time of coming for infertility treatment despite being less

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7 Previously known as Port Elizabeth
than 30 years of age. It was also required that the males participating in this study be married to the females participating in the study, as this increased homogeneity of the sample even further, thus allowing the males and females in the study to be more comparable as they share a large portion of biographical information due to living in the same environment or home.

Thirty one males and 31 females consented to participate in the study. All 62 participants completed the questionnaires administered correctly and thus all 62 were included in the final sample. This number of participants was adequate in order to produce the information required for the purposes of this study. Bailey (1987) stated that although it is difficult to make general rules about the sample size required in research, 30 participants are considered to be a suitable minimum. It was thus decided that 62 participants were an adequate sample size for the current descriptive study.

In the following subsections of this chapter the sample’s biographical details, which were obtained from the biographical questionnaire administered, are described in order to provide a more comprehensive background to the participating sample.

### 6.4 Biographical Data

#### 6.4.1 Age

The age of the participating sample ranged from 29 to 49 years, with the average age being 34.92 years. The males’ ages ranged between 29 and 49 years, with the average age being 35.87 years while the females’ ages ranged from 25 and 44 years, with their average age being 33.97 years.

The mean and standard deviation of the age variable are presented in Table 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Total</td>
<td>62</td>
<td>34.92</td>
<td>25</td>
<td>49</td>
<td>4.40</td>
</tr>
<tr>
<td>Age Males</td>
<td>31</td>
<td>35.87</td>
<td>29</td>
<td>49</td>
<td>4.82</td>
</tr>
<tr>
<td>Age Females</td>
<td>31</td>
<td>33.97</td>
<td>25</td>
<td>44</td>
<td>3.76</td>
</tr>
</tbody>
</table>
Although the minimum ages of participants show to be below 30, only three participants who are younger than 30 years of age making the majority of participants (95.16%) 30 years and older. In Chapter 4 it was noted that many factors contribute to shaping the individual’s SOC, but that by the age of 30 years individuals have been exposed to a pattern of life experiences for some years that enables SOC to crystallize. When examining the ages of the current sample, with the exception of three individuals who are younger than 30 years of age, it is clear that the majority should have an established SOC. Antonovsky (1987) indicated that the SOC of an adult is a construct that is deeply rooted and stable for most part of one’s life that does not change except for temporary fluctuations around the mean.

According to Diener and Suh (1997), a relationship exists between age and the components of subjective well-being. Diener and Suh (1997) further stated that although pleasant affect declines with age, negative affect remains relatively unchanged while life satisfaction showed to increase. This lack of a significant decrease in life satisfaction across an individual’s life span suggests an impressive ability of human beings to adapt to their conditions (Diener & Suh, 1997). As this is not a longitudinal study where a comparison is made between past and present levels of coping resources, sense of coherence, satisfaction with life and life happiness, no assumptions can be made with regards to this sample’s levels of psychofortology. The following subsection will discuss the gender distribution of the sample of infertility patients.

### 6.4.2 Gender

The study constituted 62 participants in its sample of which 31 (50%) were male participants and 31 (50%) were female participants. This biographical component represented as gender is presented in Table 3.

<table>
<thead>
<tr>
<th>Category</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>31</td>
<td>50.00</td>
</tr>
<tr>
<td>Female</td>
<td>31</td>
<td>50.00</td>
</tr>
</tbody>
</table>
According to Wissing and Van Eeden (1997) males showed a higher level of subjective well-being than females in the South African context. During a study done by Myers and Diener (1995) they concluded that females are twice as likely as men to suffer from anxiety and depression, and that their happiness is dependant on marital happiness whilst the happiness of men correlates more strongly to their satisfaction at work. The following subsection will discuss the language distribution of the participating sample.

### 6.4.3 Language

The language distribution of the participants is indicated in Table 4.

<table>
<thead>
<tr>
<th>Language</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>36</td>
<td>58.06</td>
</tr>
<tr>
<td>Afrikaans</td>
<td>20</td>
<td>32.26</td>
</tr>
<tr>
<td>Xhosa</td>
<td>4</td>
<td>6.45</td>
</tr>
<tr>
<td>Dutch</td>
<td>2</td>
<td>3.23</td>
</tr>
</tbody>
</table>

The sample consisted of 58% English-speaking participants followed closely by 32% Afrikaans-speaking participants. The high percentages of English respondents may be attributed to the fact that the questionnaires were administered in English and it was a requirement that participants be able to read and write English at a Grade 10 level. The next subsection discusses the marital status of the sample.
6.4.4 Marital Status

The frequency distribution of the biographical data for marital status is presented in Table 5.

Table 5
Marital Status of the Sample

<table>
<thead>
<tr>
<th>Category</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>62</td>
<td>100.00</td>
</tr>
</tbody>
</table>

As mentioned earlier in this chapter one of the inclusion criteria of participants in the study was that the male participants should be married to the female participants and therefore all participants were married. It can thus be said that 31 married couples participated in this research study. The next subsection discusses the employment status of the participants.

6.4.5 Employment

As indicated in Table 6, 95.16% of the participants in the sample were employed while 4.84% of them were unemployed at the time the study was conducted. According to Strümpfer (2005, p.4) the move towards the flourishing pole of the continuum in the direction of fortigenic processes could wax as a result of positive, eustress experiences, such as continuing education, self-directed work experiences, participation in socially valued decision making, a rejuvenating love relationship, the joys of parenthood, psychotherapy, and religious conversion and participation could also play a role. On the other hand the downward move along this continuum in the direction of languishing, fortigenic processes could wane as a result of distressing experiences, for example, serious illness or injury, bereavement, untoward work experiences without any escape, retrenchment or unemployment, social isolation, political upheaval or war. It thus seems that employment has a positive effect on an individual’s subjective well-being. The frequency distribution of the biographical data for employment is presented in Table 6.
Table 6

<table>
<thead>
<tr>
<th>Category</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td>59</td>
<td>95.16</td>
</tr>
<tr>
<td>Unemployed</td>
<td>3</td>
<td>4.84</td>
</tr>
</tbody>
</table>

The medical cause of infertility within the participating sample is discussed in the next subsection of this chapter.

6.4.6 Medical Cause of Infertility

The frequency distribution of the biographical data for the medical cause of infertility is presented in Table 7.

Table 7

<table>
<thead>
<tr>
<th>Category</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Factors</td>
<td>14</td>
<td>22.58</td>
</tr>
<tr>
<td>Female Factors</td>
<td>20</td>
<td>32.26</td>
</tr>
<tr>
<td>Combined Factors</td>
<td>4</td>
<td>6.45</td>
</tr>
<tr>
<td>Unknown Factors</td>
<td>24</td>
<td>38.71</td>
</tr>
</tbody>
</table>

In the participating sample the majority of individuals or couples (38.71%) were receiving treatment but the factors causing their infertility was unknown. Seven couples or 14 individuals (22.58%) received treatment due to male factors causing the infertility while 10 couples or 20 individuals (32.26%) were receiving treatment due to female factors causing the infertility. Only two couples or four individuals (6.45%) were receiving treatment due to combined factors in both partners causing the infertility.

In a literature review done on infertility in Chapter 2, Ferring Pharmaceuticals (2002) indicated that a third of infertility cases can be related to male factors, while another third to female factors and the last third to a contribution of factors by both partners. Ferring Pharmaceuticals (2002) further explained that no organic or metabolic reason is ever
found for some couples despite years of effort of trying to conceive and this is regarded as unexplained infertility. When comparing the sample in this study to these statistics it seems that although a third of the sample’s causes were due to male factors and another third due to female factors less than a 10th was due to combined factors, whilst the last third was due to unknown causes. The next subsection of this chapter discusses the time period or duration of the participants’ infertility treatment.

6.4.7 Period Receiving Treatment

As indicated in Table 8, 29.03% of the sample received treatment for less than one month and 19.35% received treatment for more then one month but less than six months, while 51.62% received treatment for more than six months. Dean (2004) stated that infertility treatment has a 25 percent success rate per treatment cycle, meaning that it often has to be repeated several times before a pregnancy occurs, implying that fertility treatment can become a lengthy process which causes the infertility to become part of a individual’s or couple’s life cycle. The frequency distribution of the biographical data for the time period or duration that the sample has received treatment is presented below in Table 8.

<table>
<thead>
<tr>
<th>Category</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 month</td>
<td>18</td>
<td>29.03</td>
</tr>
<tr>
<td>1 to 6 months</td>
<td>12</td>
<td>19.35</td>
</tr>
<tr>
<td>7 to 12 months</td>
<td>6</td>
<td>9.68</td>
</tr>
<tr>
<td>13 to 24 months</td>
<td>8</td>
<td>12.91</td>
</tr>
<tr>
<td>More than 24 months</td>
<td>18</td>
<td>29.03</td>
</tr>
</tbody>
</table>

The method of Artificial Reproductive Treatment received by the participating sample is discussed in the next subsection of this chapter.
6.4.8 Method of Artificial Reproductive Treatment Received

Although the Artificial Reproductive Treatment received was not an inclusion criterion for participants the researcher included this in the biographical questionnaire so as to give the reader richer background information regarding the participating sample. The frequency distribution of the biographical data for the method of Artificial Reproductive Treatment received by the participating sample is thus presented in Table 9.

<table>
<thead>
<tr>
<th>Category</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVF</td>
<td>24</td>
<td>38.70</td>
</tr>
<tr>
<td>GIFT</td>
<td>2</td>
<td>3.23</td>
</tr>
<tr>
<td>IVF &amp; GIFT</td>
<td>2</td>
<td>3.23</td>
</tr>
<tr>
<td>IVF, GIFT &amp; Male Treatment</td>
<td>34</td>
<td>54.84</td>
</tr>
</tbody>
</table>

In the participating sample the majority of individuals or couples (54.84%) were receiving a combination of IVF, GIFT and male treatment while 24 individuals or 12 couples (38.70%) of the participating sample were receiving IVF treatment.

A brief discussion of the biographical and standardized questionnaires utilized in the present study follows next.

6.5 Research Measures

The following paper-and-pencil measures were utilized for the purposes of this research study:

6.5.1 Biographical Questionnaire

A brief non-standardized biographical questionnaire was constructed to gather demographic and background information from the participants. The questions included in this questionnaire were based on the necessary biographical information needed for more meaningful and rich interpretation of the research findings. Although the biographical questionnaire is not the focus of the study, the researcher felt it important to
describe the sample in terms of the variables discussed in the literature chapters of this study.

The biographical questionnaire consisted of closed-ended questions and included variables such as age, gender, language, marital status, employment status, medical cause of infertility, period receiving infertility treatment and method of artificial reproductive treatment received. The biographical questionnaire can be found in Appendix C.

6.5.2 The Sense of Coherence Scale (SOC-29)

The Sense of Coherence Scale (SOC-29), referred to as the Orientation to Life Questionnaire in its operational format, was developed to operationalise the construct of SOC. This scale was developed by Antonovsky in 1987 as a systematic, closed questionnaire useable in both interviews as well as self-completion situations (Antonovsky, 1987).

Antonovsky’s (1993) measure contains 29-items and is based on the theoretical concept of sense of coherence and around the three implied concepts of comprehensibility, manageability, and meaningfulness. The SOC-29 scale consists of 29 five-facet items, where the first four facets describe a stimulus and the fifth describes one of the three SOC components (Antonovsky, 1993). Antonovsky explicitly warned that the SOC scale measures global orientation, and not the explicit components of comprehensibility, manageability, and meaningfulness.

Respondents are asked to select an appropriate response that rates their position on a seven point Likert scale which has two anchoring phrases at each end of the continuum. Scores can range between 29 and 203, where a higher score is indicative of a stronger SOC. Eleven items contribute to comprehensibility, 10 to manageability and eight to meaningfulness. Comprehensibility is concerned with the degree to which the individual regarded internal and external stimuli as consistent, ordered and clear (e.g., When something unpleasant happened in the past, your tendency was: 1 – to eat yourself up about it, or 7 – to say it’s okay, that’s that, I have to live with it, and go on). Manageability represents itself as the belief of the individual that there existed available resources to deal with these stimuli (e.g., How often do you have feelings that you’re not sure you can keep under control? 1 – very often, or 7 – very seldom/never). Lastly,
Meaningfulness refers to the degree in which the individual perceived his/her stressors as “challenges worthy of investment and engagement” (e.g., How often do you have the feeling that there’s little meaning in the things you do in your daily life? 1 – very often, to 7 – very seldom/never).

Internal consistency and reliability of the SOC-29 was found to be high with the Cronbach alpha at 0.93 (Frenz, Carey & Jorgensen, 1993). There is also substantial evidence that confirms content validity and face validity, with further indications of good construct validity and criterion validity (Antonovsky, 1993). Antonovsky (1996) found that the 29-item SOC scale was consistently feasible, reliable and valid across cultures, social classes and ethnic groups for both men and women. The SOC has also been found to have high correlation to a variety of measures of well-being and health (Smith & Meyers, 1997). The SOC scale has been used in a variety of countries with the scale being translated into 14 languages (Antonovsky, 1993).

Wissing and Van Eeden (1997), two South African researchers, found the validity and cross-cultural applicability to be adequate and they also confirmed the universal applicability and validity of the construct across gender, age and culture in the South African context. The SOC-29 has been utilized successfully in research conducted at various university across South Africa (e.g., Nelson Mandela Metropole University; Stellenbosch University; North-West University) with these studies confirming reliability and validity of the scale (Brown, 2002; Cairns, 2001; Jansen, 2006; Madhoo, 1999; Nortier, 1999; Waddington, 2005). For this reason, it was deemed appropriate for the purpose of the present study. In the following section the Coping Resources Inventory is discussed.

### 6.5.3 The Coping Resources Inventory (CRI)

The Coping Resources Inventory (CRI), developed by Hammer and Marting (1988), aims at providing a tool to identify resources that are currently available to individuals in managing stress. According to Hammer and Marting (1988) an individual’s self-esteem can be enhanced by identifying and acknowledging competencies and resources as well as their deficits and impairments. According to Hammer and Marting (1988) such increased knowledge on the role of resources in coping could assist in the planning of
prevention programmes and allow researchers to specify more comprehensive models of coping that take into account both deficits and resources. However, the primary focus of the inventory is to identify resources rather than deficits (Hammer & Marting, 1988).

The CRI has been used in a variety of contexts and applications (Kirsten, 2003; Madhoo, 1999; Smith, 2006; Wissing & Van Eeden, 1997), including the following:

1. In treatment planning for stress-related problems of individuals in counseling.
2. In treatment planning for specific rehabilitation programmes.
3. As a tool for designing stress workshops tailored for specific groups.
4. As a tool for programme evaluation.
5. As an educational planning and assessment device in high school health classes.
6. As a research instrument to investigate coping resources in various populations, and to provide a standardized measure in coping research.

The resource domains of the CRI were devised by the test developers based on their experience in conducting stress programmes, as well as based on a thorough literature review. All the resources that fell into the counseling domain were then incorporated into the measure. As a result, the CRI consists of 60 items that explores resources in five domains, namely cognitive, social, emotional, spiritual/philosophical and physical (Hammer & Marting, 1988). A four point rating scale is used to indicate how often an individual has engaged in a particular domain during the past six months. The estimated time taken according to Hammer and Marting (1988) to complete the CRI is 10 minutes.

The scope of the five domains is as follows:

1. Cognitive (COG): Which measures the extent to which individuals maintain a positive sense of self-worth, which includes a positive outlook towards others and life in general (e.g., I like myself, I feel as worthwhile as anyone else).
2. Social (SOC): The social domain captures the degree to which individuals are actively involved in the social networks that are able to provide support in stressful times (e.g., I am comfortable talking to strangers, I show others when I care about them).
3. Emotional (EMO): The items in this domain measure the degree to which individuals can accept and express a range of emotions. This is based on the premises that an ability to express a range of emotions will reduce the long-term effects of stress (e.g., I can show it when I am sad, I express my feelings to close friends).

4. Spiritual/Philosophical (SP/PHI): This domain measures the degree to which individuals are guided by stable and consistent values that are derived from religion, family, cultural traditions and from personal philosophy. These values could serve to provide meaning in allowing an individual to frame life-events in a certain way (e.g., I accept the mysteries of life and death, I can make sense out of my world).

5. Physical (PHY): The physical domain aims to measure the extent to which an individual is actively involved in health-promoting behaviours that are believed to contribute to increased levels of physical well-being (e.g., I have plenty of energy, I eat junk food).

Respondents are required to indicate how often they have engaged in the behaviour described in an item over the past six months by using a 4-point scale which gives the options to answer: never, sometimes, often or always. The questionnaire is then scored using a 4-point Likert scale system such that the sum of the item responses for each scale constitutes the scale scores. The CRI is hand-scored, using a standardized test template provided by the test developers. As the scales have different numbers of items, direct inter-scales comparisons based on raw scores are not possible. Thus the raw scores need to be converted to standard scores which have a mean of 50 and a standard deviation of 10 scaled points. The total resource score is then computed by adding the five individual scale scores. The higher the scale score, the higher the perceived resources (Hammer & Marting, 1988). According to Hammer and Marting approximately 95 percent of individuals will have a standard score that falls between 30 and 70 points. The conversion of raw scores to standard scores is done by using tables provided in the manual of the CRI. As there are gender differences in coping resources, separate conversion tables are provided for both men and women (Hammer & Marting, 1988).
The validity and reliability of the CRI has been tested on a number of subjects (Hammer & Marting, 1988). Hammer and Marting found that the CRI has predictive, convergent, divergent, discriminant as well as concurrent validity. Reliability was proven in that the measure achieved homogeneity of item content per scale and test-retest reliability; investigated over a six week period indicated that the CRI scores were relatively stable over time. Internal consistency was further confirmed as measured by Cronbach’s alpha (Cronbach’s alpha = 0.93), which indicates that the CRI are fairly homogenous and reliably tapped (Hammer & Marting, 1988). Although this American measure has not yet been normed for a South African population, a number of studies have already been conducted at the Nelson Mandela Metropolitan University (e.g. Brown, 2002; Cairns, 2001; Hatuell, 2004; Madhoo, 1999) using the CRI.

### 6.5.4 The Satisfaction with Life Scale (SWLS)

The five-item Satisfaction with Life Scale (Diener et al., 1985a) was developed to provide a measurement of global life satisfaction, where global refers to a cognitive, judgemental process in which the individual assesses quality of life based on one's own, unique set of criteria (Pavot & Diener, 1993). The SWLS places the respondent in the privileged position to subjectively report on his/her personal experience of well-being.

Respondents indicate a general sense of life satisfaction in the SWLS using a seven point Likert scale that ranges from 1 – strongly disagree to 7 – strongly agree. The SWLS consists of five statements that the respondent may agree or disagree with (e.g., In most ways my life is close to my ideal, The conditions of my life are excellent).

The range of scoring for this measure falls between 5 which indicate a low satisfaction with life and 35 which are indicative of a high sense of life satisfaction. The scores on the SWLS can be interpreted in terms of absolute, as well as relative life satisfaction. Scores between 5 and 9 are indicative of being extremely dissatisfied with life, a score that ranges from 10 to 14 represents dissatisfaction with life while a score of between 15 and 19 represents slight dissatisfaction with life. A score of 20 represents the neutral point on the scale, indicating this as the point at which an individual is about equally satisfied and dissatisfied with life. A score between 21 and 25 represents slight satisfaction with life, while a score between 26 and 30 indicates satisfaction with life. Finally, a score between
31 and 35 signifies extreme satisfaction with life. As the SWLS only constitutes 5 items it allows for itself to be incorporated into an assessment battery with minimal cost and time-expenditure (Pavot & Diener, 1993).

According to Diener et al. (1985a) and Pavot and Diener (1993) the SWLS has shown to be both valid and reliable and norms have been developed for various cultures. In studies done by Wissing and Van Eeden (1997) in South Africa, a standard deviation and mean very similar to that of Pavot and Diener (1993) was found. Pavot and Diener (1993) established the mean score of the SWLS to be 23.50, with a standard deviation of 6.43.

The SWLS has proven to be both a valid and reliable measure of life satisfaction. In terms of reliability, Diener et al. (1985a) reported a two-month test-retest reliability coefficient of 0.82 and an alpha-reliability coefficient of 0.87. Construct validity for the scale is supported by positive correlations between the SWLS and extraversion, marital status, health, and self esteem, as well as the negative correlation patterns between the SWLS and neuroticism (Pavot & Diener, 1993). Furthermore, Pavot and Diener (1993) found that a number of independent sources of evidence suggest the discriminant validity of the SWLS.

The instrument has been used widely internationally during studies done by Suh, Diener and Fujita (1997) as well as by Diener (2000). Research studies using the SWLS at Universities in the South African context includes Bouma (2001), Gal (2004), Jansen (2006), and Vorster (2002). Results from these studies revealed a mean score of 28.03 with a standard deviation of 5.07.

The SWLS can be regarded as an assessment tool which focuses on the positive side of the respondent’s experiences rather than on negative emotions. It is also an important tool in measuring change or fluctuations in subjective well-being in intervention or therapeutic outcomes (Pavot & Diener, 1993). According to Pavot and Diener (1993), the SWLS does not claim to measure all aspects of subjective well-being but intends to assess cognitive rather than an affective component of the construct. The next section focuses on the other measure of subjective well-being which was utilized during this study, namely the Affectometer-2.
6.5.5 The Affectometer-2 Scale (AFM-2)

The Affectometer-2 Scale (AFM-2) is a 40-item scale that measures general happiness or a general sense of well-being through the balancing of positive and negative feelings in recent events (Kammann & Flett, 1983). Quality of life experienced on an emotional level is measured by the AFM-2 where the overall level of well-being can be understood as the extent to which positive emotions predominate over negative feelings (Kammann & Flett, 1983).

The AFM-2 assesses participants’ long-term levels of pleasant affect, lack of unpleasant affect, and life satisfaction in general. Subjects integrate and weigh different domains of their life in the way they choose, whether it is positive or negative affectivity, which determine their satisfaction with life as a whole (Diener, 1994).

Respondents are requested to report their feelings “over the past few weeks”. According to Kammann and Flett (1983, p.260), the time frame used reflects a “compromise between measuring the sense of well-being in its most global meaning and the choice of a time period amenable to reasonably accurate recall”. In the case of the current study, infertility patients need to make a comparison between what they previously experienced (e.g., before infertility diagnosis) and what they are presently experiencing (e.g., after being diagnosed as infertile).

The AFM-2 is subdivided into two subscales with 20 items on each subscale, which include 10 positive and 10 negative items. Positive and negative items are represented alternately in order to reduce the possibility of the negative effect of response styles (Kammann & Flett, 1983). Respondents provide an indication of how often they experienced a certain feeling, as graded on a 5-point Likert scale that ranges from ‘not at all’ to ‘all the time’. The mean time to complete the AFM-2 is 5 to 10 minutes and it aims to measure Positive Affect (PA), Negative Affect (NA) and Positive-Negative Affect balance (PA-NA) (Wissing & Van Eeden, 1997).

The 40 items for this scale were empirically selected from a pool of 435 possible adjectives and sentences. These items can be grouped into the following 10 categories: (a) confluence, (b) optimism, (c) self-esteem, (d) self-efficacy, (e) social support, (f) social interest, (g) freedom, (h) energy, (i) cheerfulness, and (j) thought clarity. For each
of these 10 ‘characteristics of happiness’, four item were identified, one each derived from the following groupings:

1. Positive sentences (e.g., My life is on the right track, I feel loved and trusted).
2. Negative sentences (e.g., I feel there must be something wrong with me, My thoughts go around in useless circles).
3. Positive Adjectives (e.g., Satisfied, Optimism).
4. Negative Adjectives (e.g., Confused, Depressed).

The score on the AFM-2 range between -48 and +80 with a score of 16 representing the neutral point. The total score for general happiness is obtained by subtracting the subtotal for Negative Affect (NA) from the subtotal for Positive Affect (PA) (Wissing & Van Eeden, 1997). Positive subjective well-being (e.g., happiness) is indicated by a higher score, while a lower score indicates a more negative subjective well-being (e.g., unhappiness).

A Cronbach alpha co-efficient of 0.95 was reported by Kammann and Flett (1983), confirming the validity of the AFM-2 through research conducted. The correlation coefficient (r) between the two subscales was 0.87 (Kammann & Flett, 1983). Although the AFM-2 has been used internationally, several South African researchers (e.g., Beetge, 2006; Odendaal, 1999; Phillips, In press; Vorster, 2002; Wissing & Van Eeden, 1997), have also used the measure successfully. The following section focuses on the research procedure that was utilized.

### 6.6 Research Procedure

Verbal consent was obtained from the participating clinic to conduct the research using patients on Artificial Reproductive Technology (ART) treatment at a privately managed health care unit in the Nelson Mandela Metropole area. The research study was also approved by the Ethics Committee (Human) of the Nelson Mandela Metropolitan University. Although the research co-ordinator consented to the research study the ethical parameters and confidentiality of medical records containing details of possible participants provided a challenge for her. It was thus decided that the research co-ordinator of the participating infertility and wellness centre would contact possible

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8 Previously known as Port Elizabeth
participants to obtain their consent bearing the inclusion criteria for the participants of this study in mind. The research co-ordinator identified potential participants by a process known as ‘nominations’. The identified participants were then contacted by the research co-ordinator of the clinic to explain the nature of the research project and to gain verbal consent for their participation in the particular project. Once the various individuals verbally agreed to participate in this study they were given an envelope that carried all necessary information.

Each participant received an envelope that contained an information letter concerning the nature, purpose and procedure of the study (Appendix A); a voluntary consent form (Appendix B); a biographical questionnaire (Appendix C); The Orientation to Life (SOC-29) questionnaire; The Satisfaction with Life Scale (SWLS); The Affectometer-2 Scale (AFM-2) and the Coping Resources Inventory (CRI). Included in each questionnaire was a clear description explaining how to complete these questionnaires. The participants were provided with the documents by the research co-ordinator of the participating clinic. The research co-ordinator assisted with the administration of the measure and was briefed on the purpose of the measures and how they were to be completed. This enabled the research co-ordinator to assist the participants in completing the questionnaire and also equipped her to answer any questions the participants might have had during the course of completing the questionnaires. Once the questionnaires were completed, participants returned them to the research co-ordinator at the clinic in a sealed envelope thus ensuring confidentiality. Although participants were not required to provide their names for the purposes of this study, names were required from those participants who requested general feedback about the study in the form of a summary sheet.

According to Fouché (2000) response rates are raised by hand delivering questionnaires. This improves response rate as a result of the personal contact that occurs when questionnaires are given to the participants on the one hand. Furthermore response rate is increased as fieldworkers do not approach respondents at an inconvenient time. In the current study participants could complete their questionnaires while waiting for their appointment at the clinic.

Completion of the questionnaire package took between one hour and one and a half hour after which respondents were asked to return the completed questionnaires in the
provided envelopes. In this study 100 questionnaires were prepared and 70 were handed out of which 62 were completed and returned. The remaining questionnaires were not handed out and it can thus be said that the study yielded an 89% return rate. According to Snyman (1984) this could be considered to be an excellent return rate. Further telephonic contact was made with participants who failed to return their questionnaires. These participants voiced that they chose to withdraw from the study and their uncompleted questionnaires were picked up by both the researcher and the research co-ordinator of the clinic.

The questionnaires were scored and re-scored by the researcher to eliminate the possibility of error. Data were analysed with the assistance of a research consultant and a statistician. A summary report was made available to participants who requested feedback as well as to the research co-ordinator of the participating infertility unit.

6.7 Data Analysis

The data was analysed according to the five aims of the study. The researcher employed the services of a research consultant to assist with the analysis of the data obtained during this study. Descriptive statistics were used to analyse the data in terms of aim one to four, namely: (a) To explore and describe the coping resources of men and women undergoing infertility treatment (b) to explore and describe the sense of coherence of men and women undergoing infertility treatment (c) to explore and describe the satisfaction with life experienced by men and women undergoing infertility treatment and (d) to explore and describe the life happiness of men and women undergoing infertility treatment.

Descriptive statistics investigates the mean, ranges and standard deviations of a measure. The mean is a measure of central tendency, meaning that it provides numerical values referring to the centre of the distribution, while the standard deviation can be described as a measure of variability, meaning that it measures the average deviation score from the mean score (Cozby, 1993; Struwig & Stead, 2001). The advantage of using the mean is that it can be algebraically manipulated and is also a better estimate of the population mean than other measures of central tendency (e.g., the mode or median). Determining the standard deviation of the sample’s results is important for the purposes
of this study as no norms exists for patients on infertility treatment in particular and thus data in this regard needed to be described in terms of its mean and distribution.

The fifth aim, to compare the coping resources, sense of coherence, satisfaction with life and life happiness of males and females undergoing infertility treatment, was analysed using independent t-tests. T-tests are the most commonly used method to evaluate the differences in the means between two groups. For the purposes of this study independent t-tests were applied to the SOC-29, SWLS, AFM-2 and CRI respectively in order to draw inferences about differences in the means of male and female infertility patients. In order to assess the statistical significance of the results computed for the fifth aim of this study, a p-value of .05 was utilized as this is the standard for most psychological research reports (Harris, 1998).

Further investigations were made through Chi square tests in order to draw inferences about differences based on cross tabulations. Furthermore, Cronbach alpha’s for the various standardized measures were calculated for the present study. The Cronbach alpha coefficient is an internal consistency index designed to use in measures containing items that have no right or wrong answers. An example of such a measure is for instance where the respondents are requested to indicate the degree to which he or she agrees or disagrees with specific statements. Answers are indicated on a 4-point to a 7-point Likkert scale depending on the measure utilized during the current study. The interpretation of coefficient alpha is the same as other internal consistency reliability coefficients (e.g., between 0.0 and 1.0, with higher reliability lying closer to 1.0) (Mason & Bramble, 1989). The generally agreed upon lower limit for the Cronbach’s alpha is .70, although according to Hair, Anderson, Tatham and Black (1998) this figure may decrease to .60 in the case of exploratory studies.
6.8 Ethical Considerations

According to De Vos (2000) a number of unique ethical problems arise when human beings are the object of research. Ethical guidelines according to Vorster (2002) serve as a standard and base upon which the researcher should evaluate their own conduct. In order to maintain good ethical practice and a level of professionalism and accountability a number of ethical guidelines were followed. This involved seeking approval of both the Faculty’s Research, Innovation and Technology Committee as well as the Ethics Committee (Human) of the Nelson Mandela Metropolitan University.

In order to protect the participants taking part in this study the researcher strictly adhered to the necessary ethical considerations (Strydom, 1998). Grieve (2001) indicated that all behavioural assessment allows for the possibility of invasion of privacy, and a level of accountability for the way in which assessment measures are used, administered and interpreted. In order to achieve fair and ethical testing the researcher needed to be familiar with professional and ethical standards of good assessment practice and be trained in the measures that were used for this study (Foxcroft, Roodt & Abrahams, 2001). The researcher explained the exact reason for testing and also what was intended with the findings of this research project to all participants. Participants were informed about the rights they have, such as: their right to participate voluntary as well as their rights to confidentiality, privacy and respect. Lastly they were also informed about ‘informed consent’ and their right to be able to withdraw from the study at any point in time.

As suggested by De Vos (2000), the researcher expressed indebtedness to the research participants by maintaining good relations with them through making the results of the study available in the form of a summary sheet that provided general feedback to the Infertility and Wellness Clinic. Furthermore, individual counselling was made available to any of the respondents who felt the need to be debriefed.
6.9 Conclusion

The researcher chose the methodology and design used to describe this exploratory-descriptive study based on this study’s aims and purpose. The data were gathered using a biographical questionnaire. Two measures for coping, namely: (a) the CRI which measures coping resources, and (b) the SOC-29 which measures sense of coherence. Furthermore, two measures were utilized to assess subjective well-being, namely: (a) the SWLS which measures satisfaction with life, and (b) the AFM-2 which measures life happiness. Non-probability purposive sampling procedure was utilized when choosing the particular infertility patients that participated in this study. Throughout the process the ethical guidelines discussed in this chapter were taken into consideration by the researcher. The data were statistically analysed using descriptive statistics which described the means and standard deviations of the participants’ coping and subjective well-being. The results obtained are reported and discussed in the next chapter.
CHAPTER 7
RESULTS AND DISCUSSION

7.0 Introduction
The results and discussion presented in this chapter were guided by the aims of the present research study which was to explore and describe the psychofortology, which constitutes the coping and subjective well-being, of males and females undergoing infertility treatment at a privately managed health care unit in the Nelson Mandela Metropole\textsuperscript{9} area. The first four aims of the present study were to explore and describe the coping resources, sense of coherence, satisfaction with life and life happiness of men and women undergoing infertility treatment. The results of the four measures, namely the: Coping Resources Inventory (CRI), Sense of Coherence Questionnaire (SOC-29), Satisfaction with Life Scale (SWLS), and Affectometer Scale (AFM-2) which guided the aims one to four of this study are presented and discussed individually. For each aim, the combined results of the males and females in the study is presented and discussed. The fifth aim was to compare the coping resources, sense of coherence, satisfaction with life and life happiness of these males and females constituting the sample. For this aim the male participants’ results is presented first then that of the females, followed by a general discussion of the results presented. Following the difference between the males’ and the females’ results are presented and discussed.

7.1 Results of the Measures
The following section addresses the five aims of this study. The general aim of the study was twofold, firstly to explore and describe the coping and subjective well-being of the sample of males and females undergoing infertility treatment and secondly to compare the coping and subjective well-being of males and females undergoing infertility treatment.

\textsuperscript{9} Previously known as Port Elizabeth
7.1.1 Aim 1: To explore and describe the coping resources of men and women undergoing infertility treatment

Coping Resources

Before addressing the findings of the current study with regards to the Coping Resources Inventory, it is necessary to highlight some literature discussed on coping resources in Chapter 4. Hammer and Marting’s (1988) Coping Resource Inventory (CRI) examines the resource end of the demand-resource imbalance across five domains, namely the: cognitive, social, emotional, spiritual/philosophical and physical domains. Hammer and Marting (1988), whose model of coping resources was adopted for the purposes of this study, state that people make use of coping resources to facilitate more effective management of stressors. They defined coping resources as: “those resources inherent in individuals that enable them to handle stressors more effectively, to experience fewer or less intense symptoms upon exposure to a stressor or to recover faster from exposure” (Hammer & Marting, 1988, p.2). As described in Chapter 4, Hobfall (1989) described resources as: “those objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies” (p.516).

In terms of appraisal processes, as outlined by Lazarus and Folkman (1984), coping resources come into play during both primary and secondary appraisal. Primary appraisal can be described as the process whereby an individual appraise whether a situation can bring harm or negative consequences. An individual with a high perceived level of coping resources would be less likely to make the initial appraisal that a stressful event or demand is in fact threatening. However, if a situation is appraised as a threat or as harmful by an individual, the individual starts a process called secondary appraisal. During secondary appraisal the individual assesses their resources in an attempt to reduce their emotional and physiological tension. Implying that the higher the perceived resources, the better the coping of the individual. It is therefore right to assume that coping resources are concerned with the resources one draws on in order to cope.
It is important to note that Matheny, Aycock, Pugh, Curlette and Canella (1986) stated that some resources are effective in helping individuals deal with stressors, while others may be important in preventing demands from becoming stressors. They suggested that “increasing one’s (coping) resources should positively affect the equation between perceived demands and resources at the appraisal stage” (p.533). Furthermore, Kessler and Essex (1982) described individuals with low resources as vulnerable and constitutionally fragile while those with high resources have been characterized as resilient.

The means, standard deviations, ranges and Cronbach’s alphas obtained on the Coping Resources Inventory for both the total scale score as well as the sub-scores are presented in Table 10 below.

Table 10
Means and Standard Deviations of the Coping Resources Inventory

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Coping Resources (n = 62)</td>
<td>50.10</td>
<td>27.00</td>
<td>79.00</td>
<td>11.15</td>
<td>52.00</td>
<td>0.84</td>
</tr>
<tr>
<td>Cognitive Resources Scale</td>
<td>51.84</td>
<td>27.00</td>
<td>69.00</td>
<td>10.13</td>
<td>42.00</td>
<td>0.83</td>
</tr>
<tr>
<td>Social Resources Scale</td>
<td>50.08</td>
<td>19.00</td>
<td>72.00</td>
<td>10.59</td>
<td>53.00</td>
<td>0.83</td>
</tr>
<tr>
<td>Emotional Resources Scale</td>
<td>49.06</td>
<td>30.00</td>
<td>72.00</td>
<td>9.82</td>
<td>42.00</td>
<td>0.86</td>
</tr>
<tr>
<td>Spiritual/Philosophical</td>
<td>51.97</td>
<td>27.00</td>
<td>71.00</td>
<td>9.88</td>
<td>44.00</td>
<td>0.83</td>
</tr>
<tr>
<td>Physical Resources Scale</td>
<td>47.53</td>
<td>30.00</td>
<td>75.00</td>
<td>9.62</td>
<td>45.00</td>
<td>0.76</td>
</tr>
</tbody>
</table>
Standard scores were utilized during the discussion of the results presented in Table 10. The Coping Resources Inventory’s five different subscales all have a different number of items, thus making direct comparisons between the sub-scales based on raw scores impossible. The mean raw scores obtained by the current sample for each of the five sub-scales as well as for the total of the coping resources scale was converted to a standard score that has a mean of 50.00 and a standard deviation of 10.00 scaled points. According to Hammer and Marting (1988) approximately 95% of individuals will have standard scores that fall between 30.00 and 70.00 scaled points. Therefore, scores below 30 are considered as being below average, a score of 50.00 is considered as an average level of coping resources, while scores above 70.00 are considered as being above average (Hammer & Marting, 1988).

The mean obtained by the current sample for the total of the coping resources scale was 50.10, with a standard deviation of 11.15. This mean of 50.10 compares well with the mean of 50.00 which was established for the CRI by Hammer and Marting (1988), the test developers. The means for the cognitive, social and spiritual/philosophical subscales were all clustered slightly above the mean of 50.00, while the means for the emotional and physical subscales were clustered together slightly below the mean of 50.00 (see Table 10). According to the results obtained from the participating sample it seems as though they perceived themselves as having fairly average levels of coping resources.

The highest mean score (51.97) obtained for the current sample was for the spiritual/philosophical resources scale. This supports research outlined in Chapter 5 that indicated that having a sense of meaning and purpose in life is an important indicator of higher subjective well-being (Compton, 2005). Myers (1992; 2000) indicated in Chapter 5 that this sense of meaning has often been measured as religiosity in research studies that have been conducted previously. These research studies found that people who reported greater religious faith, who emphasized a greater importance of religion in their lives, and who had a more frequent attendance at religious services also reported a greater sense of well-being. It seems that the increase of well-being as a result of religious activities can be ascribed to the fact that religion provides a sense of meaning for people. As the researcher did not establish the importance of religion in the lives of the participants in this study prior to diagnosis and sampling it is difficult to make hypotheses or draw any
definite links between infertility treatment and religiosity from the results of this study. However, according to research outlined in Chapter 2 the infertility treatment experience as well as a diagnosis of infertility may reflect an increased tendency on the part of couples having to cope with being infertile and to consider issues similar to that of death and dying (Ferreira, 2005).

The lowest mean score (47.53) obtained by the current sample was for the physical subscale. The literature review on infertility and infertility related treatment highlighted in Chapter 2 of this study, provide support for the findings of this research study. That is people undergoing infertility treatment are very self aware of their bodies and how they work or do not work. This is often as a result of the focus of infertility treatment on the individual’s bodily cycle. This might have influenced the participants in this study to answer some of the questions in this physical subscale in a particular way. However, cognizance must be taken of the fact that the mean score for this particular subscale was only slightly below the standardized mean. It thus seems that this subscale had relevance to some of the participants.

As discussed in Chapter 2 and 3, in order to cope with the infertility related stressors as discussed in the above section, individuals and couples can engage in a variety of ways and employ strategies in dealing with their infertility. The coping strategies and perceived coping resources utilized seem to influence the degree of stress experienced by the infertile individual (Domar, 1997). When looking at the current results it seems that there is a good comparison to previous research done by Antonovsky (1984) who found that well managed tension may cause a stressor to remain ‘neutral’ (average) or even become health enhancing by improving coping responses and resources. As the results of this sample were neutral, it can be concluded that when the participants in this sample were able to find meaning and purpose in their current experiences they were able to view their stressors in a positive light (Personal Communication, Dean, 2004; Leiblum, 1997). Coping resources in combination with sense of coherence constitutes coping as a construct within the psychofortology framework. This leads one to logically discuss sense of coherence in the next section.

7.1.2 Aim 2: To explore and describe the sense of coherence of men and women
undergoing infertility treatment

Sense of Coherence

Prior to discussing the results of the Sense of Coherence Scale it is necessary to revisit some of the literature that discussed the construct of the sense of coherence (SOC) (Chapter 4). The Sense of Coherence Scale was developed by Antonovsky (1987) and assesses the theoretical concept of sense of coherence as a global life orientation. The sense of coherence construct can be seen as a coping resource that attempts to explain the facilitation of successful, functional coping of the individual in everyday life in the face of many, complex stressors, towards a sense of health and well-being (Antonovsky, 1984; Levert, Lucas & Ortlepp, 2000). As discussed in Chapter 4 of this study, Antonovsky (1993, p. 725) defined the SOC as “a global orientation that expresses the extent to which one has a pervasive and enduring but also dynamic feeling of confidence over various areas of one’s life. It is believed that this global, depositional orientation develops over the life-span and then crystallizes in early adulthood” (Antonovsky, 1987).

Antonovsky suggested that an individual with a strong SOC would select a coping strategy that is appropriate and would therefore cope more effectively with a stressful situation. Compton (2005) furthermore stated that aspects of our behaviour that contribute to forging this positive connection to a stressful situation and others include: the ability to love, the presence of altruistic concerns, the ability to forgive, and the presence of spiritual connections to help create a sense of deeper meaning and purpose in life. As mentioned in Chapter 4 a strong belief in the availability of coping resources also allows an individual to choose the appropriate strategy to utilize from their available resources in order to help them cope successfully (Anson, Carmel, Levenson, Bonneh & Moaz, 1993). The successful coper approaches the world with the view that stressors are manageable: under the control of both the individual and legitimate others; meaningful: motivationally relevant, in the form of welcome challenges that are worth engaging with and investing oneself in; and comprehensible: making cognitive sense. This ability to perceive a given situation as manageable, meaningful, and comprehensible reduces stress and tension that is created by a stressor such as infertility; it also improves the state of health and quality of life of the individual by preventing overwhelming stress responses.
Anson, Carmel, Levenson, Bonneh and Moaz (1993) also found that both personal as well as collective resources have an independent salutogenic and fortigenic effect on the well-being of an individual after they have experienced a stressful life event. Personal resources have been found to be better resources for avoiding the effects of recent life stressors. Conversely, an individual with a poor SOC is prone to anxiety and psychological distress (Antonovsky & Sagy, 1986). It is evident that there is a direct relationship between a strong SOC and successful coping, whereas a weak SOC is linked to less successful coping (Antonovsky & Sagy, 1986). As discussed in Chapter 4, the ability of an individual to mobilize and utilize resources or a combination of resources to confront a given stressor is the real strength of the individual with a high SOC.

The mean, standard deviation, range and Cronbach’s alpha of Antonovsky’s Sense of Coherence Scale (SOC-29) are presented in Table 11 below.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense of Coherence</td>
<td>143.21</td>
<td>66.00</td>
<td>185.00</td>
<td>26.71</td>
<td>119.00</td>
<td>0.93</td>
</tr>
</tbody>
</table>

In Table 11 the mean SOC score of the current sample of infertility patients is reflected, thus providing information with regards to the coping abilities of this group of individuals. Table 11 indicates that the participants obtained a mean score of 143.21 out of a possible maximum of 203.00. The standard deviation calculated for this study was 26.71, although this is a large standard deviation it correlates well with the standard deviation of 21.68 that was calculated during Wissing and Van Eeden’s (1997) study.

The highest score was 185.00 out of a possible 203.00, while the lowest score was 66.00. According to McSherry and Holm (1994) individuals with a low SOC are psychologically more prone to feeling distressed before a stressful situation and also
maintain these greater levels of distress subsequent to the event. It can thus be hypothesized that individuals obtaining a low score on the SOC scale might have had a low sense of coherence prior to entering infertility treatment. However, as the sense of coherence of participants was not measured prior to treatment it is impossible for the researcher to make a definite hypothesis in this regard.

Another factor that might have contributed to the outliers in this study is the ability of some of the participants to utilize their Generalised Resistance Resources (GRRs) when dealing with a stressor (Antonovsky, 1996). As stated previously in Chapter 4, GRRs can be defined as: “a property of a person, a collective or a situation which, as evidence or logic has indicated, facilitates successful coping with the inherent stressors of human existence” (Antonovsky, 1996, p.15). According to Antonovsky (1987) life experience which is the result of GRRs promotes a strong SOC. In the current study there were participants that were 24 years older (49 years old) than the youngest participant in the sample who was 25 years of age (Table 2 in Chapter 6). The researcher is thus of the opinion that the big age difference of some of the participants in this study might have had an influence on their life experience. This might have resulted in very low SOC scores in the younger, less experienced participants and very high SOC scores in the older participants that have had more life experience. Furthermore Antonovsky and Sagy (1986) indicated that sense of coherence develops over one’s lifespan until the age of 30 when it becomes relatively crystallized. As some individuals were younger than 30 years of age their SOC might not yet have crystallized completely and this might have accounted for some of the outliers seen in Table 11.

Finally, according to Antonovsky (1987), SOC is also influenced by existential issues such as that of failure and even that of death. Some participants might have been recently diagnosed and still experience the diagnosis as traumatic resulting in a lower SOC score. In contrast participants that have been trying for years to fall pregnant in various ways might either feel hopeless and as if they have failed; thus also causing decreased SOC scores. On the other hand the participants that have been undergoing infertility treatment for years might have accepted their diagnosis and found meaning in their infertility diagnosis, causing elevated SOC scores.
According to Antonovsky and Sagy (1986) the successful coper approaches the world with the view that stressors are manageable: under the control of both the individual and legitimate others; meaningful: motivationally relevant, in the form of welcome challenges that are worth engaging with and investing oneself in; and comprehensible: making cognitive sense. Meaningfulness represents the most important part of the SOC construct since without it neither comprehensibility nor manageability will last (Strang & Strang 2001). The Cronbach alpha coefficient for the Sense of Coherence Scale of the participants was .93 which confirms the reliability of the results obtained in this specific scale during this study.

Although Antonovsky (1987) did not provide normative scores for the SOC-29 a number of published studies exist which serve to provide normative scores for a variety of samples (Antonovsky, 1993). With regards to South African studies, no specific norms have been established for the SOC of patients undergoing infertility treatment. The statistical results presented in Table 11 can however be compared to statistics obtained from similar research studies that were reviewed in Chapter 4. The mean obtained in this study (Mean = 143.21) is higher than the mean of 136.52 that was obtained in a study done by Wissing and Van Eeden (1997) on a heterogeneous group of South Africans from multi-cultural backgrounds. In their study Wissing and Van Eeden (1997) reported a standard deviation of 21.68. Using their study as a norm for the present research study it appears that the male and female participants in this study experienced a higher sense of coherence than the respondents in the study done by Wissing and Van Eeden (1997).

Looking at the above mentioned paragraph it appears that the mean obtained by the current sample is fairly high. As mentioned earlier in this section, individuals with a high SOC reported better levels of physical and mental health, and are expected to cope more effectively with life stressors. With regards to infertility patients, a high SOC might indicate lower treatment related stress as well as improved psychological well-being. An important hypothesis to consider is whether the relatively high mean of the participants of this study is indicative of something about their situation that may have increased their overall sense of coherence. That is, whether their sense of coherence may have changed as a natural response to their stressful life event of infertility that they are experiencing.
For discussion purposes this question will be explored further, bearing in mind that no definite attributions may be made.

Research by Madhoo (1999), presented in Chapter 4, investigated the SOC and coping resources of patients in cardiac rehabilitation. It is this research that noted that stressful life events may provoke positive psychological changes. Madhoo (1999) found that the participants in this study, also South African, showed a high mean SOC score of 159.00. This is also higher than the mean of 136.52 calculated in the study done by Wissing and Van Eeden (1997). The results of this study were useful in terms of comparison with the current study which also had an elevated mean of 143.21 in comparison with the mean obtained by Wissing and Van Eeden (1997). Even though cardiac patients were the subjects of Madhoo’s (1999) study, rather than infertility patients, the similarity rests in that all individuals were dealing with a stressful life event with possible lasting consequences on their lives.

In Chapter 3 it was reported that in a study done by Viney (1986) it was found that patients that were hospitalized with a severe or chronic illness reported significantly higher levels of positive emotion than did participants in a non-patient comparative group. Furthermore, in the study done by Taylor, Kemeny, Reed, Bower and Gruenewald (2000) on HIV-infected bereaved men, it was found that those men who were able to find meaning in the bereavement experience maintained levels of their CD4 T-helper cells over a follow-up period of two to three years. It was thus suggested in Chapter 3 that a stressful life event such as a diagnosis of infertility can act as a catalyst for re-evaluating one’s life goals and priorities and for re-establishing a sense of self. This in turn has been found to increase satisfaction with life; similar to the participants in this current research study (Schaefer & Moos, 1992). It can thus be concluded that the ability to take an experience that is tragic and distressing, and to find meaning in the experience, can help the individual live the remainder of their life with an enhanced sense of purpose and appreciation for the value of life. As mentioned in Chapter 4, meaningfulness represents the most important part of the SOC construct since without it neither comprehensibility nor manageability will last. According to Strang and Strang (2001) the concept of meaningfulness creates motivation and is therefore central to the construct of the sense of coherence.
The findings in this study are therefore in line with literature discussed in Chapter 4 of this study which indicated that there is a possibility that stressful life events and trauma may provoke positive psychological changes within an individual experiencing a given stressor (Affleck & Tennen, 1996; Schaefer & Moos, 1992; Tedeschi & Calhoun, 1995). Meichenbaum (1994) further noted that people seem to draw on an inner strength, endurance, and a degree of resiliency to survive painful experiences that result from either physical or psychological trauma. This might possibly have been the case in the lives of the participants in the current study.

In answering the speculation that the diagnosis of infertility can strengthen the sense of coherence of the current sample, it seems logical to address the question of whether one’s sense of coherence can be changed either temporarily or permanently. This was discussed in Chapter 4. Although Antonovsky (1979) viewed the SOC as deep-rooted and stable, crystallizing at the age of 30 years, he did not deny that one’s SOC can change in response to changes in life patterns. He did however describe these changes only as temporary and fluctuating around a mean (Antonovsky, 1987). Antonovsky reported that one’s SOC can change more permanently in response to a completely new and different pattern of life experiences. Antonovsky also stated that if this pattern is maintained over years, such as in the case of the current sample where, as previously mentioned in Chapter 6, 41.94% of the sample has been receiving treatment for 13 months or longer, gradual changes in SOC can be expected to occur. This change is initiated to the extent that the situation touches on the three components shaping the development and strength of the SOC (i.e., meaningfulness, manageability and comprehensibility). This implies that the changes made are dependent on the extent to which the situation provides a different long-range set of life experiences that are characterized by different levels of consistency, load balance and participation in socially valued decision making processes.

Chapter 4 also briefly looked at the four areas of a person that need to be included in order to maintain a strong SOC. These four areas as suggested by Antonovsky (1987), are: (a) one’s own feelings; (b) immediate interpersonal relations; (c) activity (e.g., work); and (d) the existential experiences of death, failures, shortcomings, conflict and isolation. As the diagnosis of infertility as well as the experience of infertility treatment can be argued to significantly touch all four of these areas of an individual’s life, it can be
assumed that it could also critically affect the pattern of an individual’s life experiences. It is important to note that even if it is assumed that the SOC of the current sample was affected by their experiences of infertility and infertility treatment, it is not possible to say whether these changes are temporary or permanent without conducting further follow-up research.

As mentioned earlier in this study the term psychofortology for the purposes of this study constitutes the two general concepts of coping which includes coping resources and sense of coherence, and subjective well-being which comprises satisfaction with life and life happiness. Up to this point in this chapter the researcher has discussed the coping of patients undergoing infertility treatment. The next section turns the reader’s attention to the results of the subjective well-being questionnaires that were administered during this study. These include: the Satisfaction with Life Scale and the Affectometer-2 Scale. Firstly, the sample’s satisfaction with life is presented and this is followed by a discussion of their global life happiness.

7.1.3 Aim 3: To explore and describe the satisfaction with life experienced by men and women undergoing infertility treatment

Satisfaction with Life

In an attempt to fully understand the findings of the Satisfaction with Life Scale the researcher felt it necessary to briefly review literature that was discussed regarding this construct in Chapter 5 of the current study. According to Diener, Emmons, Larsen and Griffin (1985a), the Satisfaction with Life Scale (SWLS) measures global life satisfaction. In other words the construct of the satisfaction with life refers to the degree to which an individual judges the overall quality of their life as favourable (Veenhoven, 1994). According to Pavot and Diener (1993) life satisfaction refers to a judgemental process in which individuals assess the quality of their lives on the basis of their own unique set of criteria. Life satisfaction also looks at an individual holistically and incorporates, for example, family life, working conditions, health and social security in determining life quality (Strack, Argyle & Schwarz, 1991). Life satisfaction can furthermore be described as a characteristic of a person’s (a) social interaction, (b)
activity, (c) thoughts, (d) self-concept, (e) typical strategies of handling stress, as well as (f) the evaluation of the individual’s own health (Strack, et al., 1991).

Myers and Diener (1995) indicated that desire attainment per se might not be the most important factor in predicting subjective well-being. Although there might be some agreement on what constitutes a high quality life or ‘the good life’, individuals are likely to assign different weights to different components of their lives (Diener, Emmons, Larson & Griffin, 1985a). It is thus important to assess an individual’s overall perception of his life rather than only satisfaction in a specific area. It was with this in mind the Satisfaction with Life Scale (Diener, Emmons, Larson & Griffin, 1985a) was constructed.

In Table 12 below, the mean, range, standard deviation, and Cronbach’s alpha coefficient that were obtained during the administration of the SWLS in this study is presented.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with Life</td>
<td>25.26</td>
<td>10.00</td>
<td>35.00</td>
<td>5.78</td>
<td>25.00</td>
<td>0.85</td>
</tr>
</tbody>
</table>

Table 12 indicates that participants obtained a mean score of 25.26 out of a possible maximum of 35.00. This indicates that the mean score falls within the “slight satisfaction with life” range. The minimum score of 10.00 falls within the category of “dissatisfaction with life” while the maximum score of 35.00 falls within the category of “extreme satisfaction with life”. The Cronbach alpha coefficient for the SWLS in the current study is 0.85 which confirmed the reliability of the findings.

Comparing the current descriptive statistics of the Satisfaction with Life Scale with the study of Wissing and Van Eeden (1997) on a multi-cultural sample of South African males and females the following can be noted. The mean score according to Wissing and
Van Eeden’s study was 23.45, which is 1.81 units lower than the mean score of 25.26 which was obtained for the current sample. While Wissing and Van Eeden’s (1997) standard deviation was 6.32, the standard deviation for the current study is 5.78. These results indicate that the present sample perceived themselves as having average levels of satisfaction with life. It may be speculated that since the respondents in this study are married (Table 5 in Chapter 6) and most of the participants employed (Table 6 in Chapter 6) they have already achieved in other areas of their lives and this might have increased their self-esteem and thus their satisfaction with life.

In Table 13 below, a breakdown of the scores obtained by participants in the current study is presented.

### Table 13

<table>
<thead>
<tr>
<th>Level of satisfaction with life</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely dissatisfied (total score between 5 and 9)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dissatisfied (total score between 10 and 14)</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Slightly dissatisfied (total score between 15 and 19)</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Neutral (a total score of 20)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Slightly satisfied (total score between 21 and 25)</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td>Satisfied (total score between 26 and 30)</td>
<td>24</td>
<td>39</td>
</tr>
<tr>
<td>Extremely satisfied (total score between 31 and 35)</td>
<td>12</td>
<td>19</td>
</tr>
</tbody>
</table>

Note: Percentages were rounded off.

According to Pavot and Diener (1993) most sample groups fall in the range of 23 (slightly satisfied) to 28 (satisfied). The scores obtained in the current study can thus be seen to be in line with that of the findings of Pavot and Diener’s (1993) study. As illustrated in Table 13, 81% of the sample indicated some degree of satisfaction with their lives, 3% were neutral, while 16% of the participants indicated some level of dissatisfaction with their lives. When looking at the percentages in Table 13 it can be
seen that the majority (81%)\(^{10}\) of the sample were satisfied with their lives. More specifically, 23% of the sample described themselves as being slightly satisfied, 39% described themselves as being satisfied, and 19% described themselves as being extremely satisfied. This reaction is surprising as all the participants in the sample had just recently undergone a stressful life event namely infertility treatment. However, although much has been written about the negative effect of stress on physical and emotional health there is growing recognition that there are positive as well as negative outcomes of stress (Park, Cohen & Murch, 1996). As mentioned previously in Chapter 3, literature is giving increased recognition to the possibility that stressful life events and trauma may provoke positive psychological changes (Affleck & Tennen, 1996; Schaefer & Moos, 1992; Tedeschi & Calhoun, 1995). Finding meaning in life, developing better coping skills, enhancing one’s social resources, establishing important personal priorities and recognizing the value of social relationships (Leedham, Meyerowitz, Muirhead & Frist, 1995; Shifren, 1996) can all develop from experiencing a stressful life event which is also expressed in literature as: (a) ‘stress-related growth’ (Park et al., 1996), (b) ‘positive personal changes’ (Curbow, Somerfield, Baker, Wingard, & Legro, 1993), (c) ‘meaning making’ (Park & Folkman, 1997), (d) ‘meaning-based coping’ (Folkman & Moskowitz, 2000), (e) ‘benefit-finding’ (Tennen & Affleck, 1999), (f) ‘benefit-appraisals’ (Lazarus, 1999), and (g) ‘growth-orientated functioning’ and ‘crisis growth’ (Holahan, Moos & Schaefer, 1996). Thus a stressful experience can act as a catalyst for re-evaluating one’s goals and priorities and for re-establishing a greater sense of self (Schaefer & Moos, 1992). This positive outcome stress is believed to have on some individuals, as reviewed in both Chapter 3 and 5 of this study, might have been the case for the current sample. Furthermore patients relate satisfaction with life positively with a treatment-related pregnancy or delivery (Schmidt et al., 2003). Some participants might have had a positive treatment result during the time period from when they consented to participate in this study to when they actually completed the questionnaires, causing elevated or unrealistically high satisfaction with life scores. Life satisfaction also looks at an individual holistically and incorporates for example: family life, working conditions, health and social security in determining life quality (Strack, Argyle & Shwarz, 1991).

\(^{10}\) 81% = Slightly Satisfied (23%) + Satisfied (39%) + Extremely Satisfied (19%)
All but two of the participants in this study are employed; participants also reported having average social support on the Coping Resources Inventory (Table 10). These factors might have contributed to participants feeling that they are still achieving and accomplishing in spite of their unsuccessful treatment cycles. The researcher is thus of the opinion that the high number of participants who reported feeling extremely satisfied with their lives might be achieving in other areas in addition to having a strong social support system. When looking at the results in Table 13 it is important to remember that the Satisfaction of Life Scale assesses an individual’s overall perception of his life rather than only satisfaction in a specific area like that of infertility treatment (Diener, Emmons, Larson & Griffin, 1985a).

As discussed previously subjective well-being consists of two dimensions, namely: satisfaction with life and life happiness. While satisfaction with life is the cognitive component of subjective well-being, the latter also has an affective component to it. This can be further divided into pleasant and unpleasant affect and is referred to as life happiness (Diener, 2000). Subjective well-being can thus be described as a broad term consisting of an individual’s evaluative reactions to his or her life in terms of life satisfaction or affect (Diener & Diener, 1995). This affective component of subjective well-being is discussed in the next section that follows.

7.1.4 Aim 4: To explore and describe the life happiness of men and women undergoing infertility treatment

Affectometer-2

As discussed in Chapters 5 and 6 of this study the Affectometer-2 Scale (AFM-2) measures general happiness or a general sense of well-being through the balancing of positive and negative feelings in recent events (Kammann & Flett, 1983). At an affective level people that describe themselves as having high levels of subjective well-being mainly feel pleasant emotions which are largely due to their ongoing positive appraisal of life events and their environment in general.
As discussed in Chapter 5, Seligman (2002) suggested that an individual needs to find their fundamental strengths and use them on a daily basis. He termed this idea ‘authentic happiness’. He suggested that these fundamental strengths would become identifiable positive character traits of the individual over time. Compton (2005) further suggested that “a hedonic focus on positive emotions is combined with a eudemonic focus on virtues and personal growth in order to produce authentic happiness” (p.173). However, conversely, people with low levels of subjective well-being experience their life circumstances and events as undesirable, and thus experience unpleasant emotions such as anxiety, depression and anger (Myers & Diener, 1995).

As previously mentioned, the Affectometer-2 scales assess quality of life on an affective level with overall well-being conceptualized as the extent to which positive feelings predominate over negative feelings (Kamman & Flett, 1983). The Affectometer-2 Scale (AFM-2) is a 40-item scale that is subdivided into two subscales with 20 items on each subscale. Each subscale includes 10 positive and 10 negative items. Respondents provide an indication of how often they experienced a certain feeling as graded on a 5-point Likert scale that ranges from ‘not at all’ to ‘all the time’. The score on the AFM-2 ranges between -48 and +80 with a score of 16 representing the neutral point. The total score for general happiness is obtained by subtracting the subtotal for Negative Affect (NA) from the subtotal for Positive Affect (PA) (Wissing & Van Eeden, 1997). Positive subjective well-being (e.g., happiness) is indicated by a higher score, while a lower score indicates a more negative subjective well-being (e.g., unhappiness). The participants’ Positive-Negative Affect Balance of the present study is presented in Table 14 below.

Table 14
Means and Standard Deviations of the Affectometer-2 Scale

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive – Negative Affect Balance (n = 62)</td>
<td>29.47</td>
<td>-32.00</td>
<td>79.00</td>
<td>25.71</td>
<td>111.00</td>
<td>.97</td>
</tr>
</tbody>
</table>
The average score of the Positive-Negative Balance (i.e., global happiness) was 29.47, with a standard deviation of 25.71. This indicates that the sample experienced slightly above neutral (i.e., neutral being a score of 16) Positive Affect. The highest score was 79.00 out of a possible 80.00, while the lowest score was -32.00; both these scores that can be regarded as outliers were obtained by females. This correlates well with Lu, Shin, Lin and Ju’s (1997) study that found women to show greater variance in the distribution of happiness scores than men. Furthermore, as previously noted in Chapter 5, research studies investigated whether it is the intensity or the frequency of positive feelings which produces happiness. Argyle (1999) found that younger people and women reported feeling emotions more intensely. Furthermore, Diener, Sandvik and Larsen (1985c) indicated that, although there were no major differences between the subjective well-being of men and women, there were clear differences in the range of emotional intensity displayed between the two groups. Results indicated that women showed emotions more intensely, which led the researchers to postulate that men were culturally expected to be less emotional. The researcher of this study is thus of the opinion that as a result of women feeling more intensely, as can be seen by the outliers created by the women in this study, it might have been a factor that contributed to the large standard deviation (25.71) obtained in the current study. The Cronbach alpha coefficient for the Affectometer-2 of the particular sample is .97 which confirms the reliability of the results obtained during this study.

The current study thus correlates well to that of Wissing and van Eeden (1997) who conducted a study on 550 male and female South Africans from multi-cultural backgrounds. In their study, Wissing and Van Eeden (1997) reported a total global happiness mean of 29.50 and a standard deviation of 19.68, indicating a difference of 0.03 between the mean of the latter study (Mean = 29.50) and the current study (Mean = 29.47). Using Wissing and Van Eeden’s study as a norm for the present research study, it appears that the male and female patients in this study experienced the same levels of global happiness as the respondents in the Wissing and Van Eeden (1997) study. It can thus be said that the score of 29.47 indicates that the sample perceived themselves to be experiencing average levels of global happiness.
A summary of the scores obtained by the participants of the current study is illustrated in Table 15 below.

Table 15
Frequencies and Percentages of the AFM-2

<table>
<thead>
<tr>
<th>Affectometer-2</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive-Negative affect (below average: between 15 and -48)</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Positive-Negative affect (average: 16)</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Positive-Negative affect (above average: between 17 and 80)</td>
<td>46</td>
<td>74</td>
</tr>
</tbody>
</table>

Note: Percentages were rounded off.

On the Affectometer-2, 11% of the participants indicated below average levels of global happiness (Positive – Negative Affect), 15% indicated average levels of global happiness, and 74% indicated above average levels of global happiness. Veenhoven (1994) defined happiness as the degree to which an individual positively evaluates the overall quality of his or her life. The researcher identified two components of happiness within this concept. The first component is the ‘hedonic’ level of affect, which implies the degree to which pleasant affective experiences usually outbalance unpleasant experiences. The second component is called ‘contentment’ and refers to the degree to which the individual perceives his or her wants to have been met. Looking at this definition of happiness it is clear to the researcher that most or all of the participants in this study are still in pursuit of a major life goal that is the goal of having a child and becoming parents. The researcher is of the opinion that the low scores might be due to participants feeling that their needs are not yet met. Frederickson (1998) developed an ‘undoing hypothesis’ which states that positive emotions help the mind and body to regain a sense of balance, flexibility, and equilibrium after experiencing negative emotions for a certain time period. The researcher is of the opinion that as most of the participants have been on treatment for an extended period of time (Table 8 in Chapter 6) they might have started to regain a sense of balance, flexibility, and equilibrium, explaining the high rate (74%) of participants experiencing above average levels of global happiness. On the other hand, Steel and Ones (2002) found external causes, life’s
hardships and pleasures, to have a considerable although interestingly, not enduring, effect on one’s subjective well-being. The researcher thus concluded that the participants in this study might have had high levels of happiness prior to receiving infertility treatment and this accounts for the high number of participants experiencing above average levels of happiness. The researcher however cannot draw a definite conclusion as the global happiness of the participants in this study was not assessed prior to them starting infertility treatment. According to Diener (1994), high levels of global happiness or subjective well-being can be described as having mainly positive thoughts and feelings about one’s life. Happy people according to Compton (2005) seem to be healthier, more successful, and more socially engaged. This causality has emerged in the last few years and research has shown that happiness brings many benefits other than merely feeling good about one (Seligman & Steen, 2005). As mentioned previously in Chapter 5 it is not merely the events that take place in an individual’s life that are responsible for happiness or unhappiness, but rather how these events are interpreted by an individual (Compton, 2005). Compton also stated that by maintaining consistent patterns of positive interpretation, stable ways of relating to the world are established. By establishing these stable patterns one would create personality traits such as ‘cheerfulness’ and ‘optimism’ which are all predictors of one’s global subjective well-being.

In conclusion, from the above four aims it can be seen that the results obtained from the CRI, SOC-29, SWLS and AFM-2 all fell in the average to slightly above average range. It can therefore be concluded from the findings highlighted above that the sample as a whole, both males and females, experienced average levels of well-being in general. In exploring the fifth aim of this study which was to compare the coping resources, sense of coherence, satisfaction with life and life happiness of males and females undergoing infertility treatment, the males’ results will be presented in a table firstly and this will be followed by the females’ results obtained. Finally a table that represents the differences in scores obtained will be shown. The four constructs constituting psychofortology for the purposes of this study (i.e., coping resources, sense of coherence, satisfaction with life and life happiness), will each be presented individually.
7.1.5 Aim 5: To compare the coping resources, sense of coherence, satisfaction with life and life happiness of males and females undergoing infertility treatment

Coping Resources

A summary of the means and standard deviations obtained by the males are presented in Table 16 while the females’ results are presented in Table 17 below.

Table 16
Male Means and Standard Deviations of the Coping Resources Inventory

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Coping Resources (n = 31)</td>
<td>52.03</td>
<td>28.00</td>
<td>79.00</td>
<td>11.03</td>
<td>51.00</td>
</tr>
<tr>
<td>Cognitive Resources Scale</td>
<td>54.58</td>
<td>31.00</td>
<td>69.00</td>
<td>9.01</td>
<td>38.00</td>
</tr>
<tr>
<td>Social Resources Scale</td>
<td>52.42</td>
<td>19.00</td>
<td>72.00</td>
<td>11.65</td>
<td>53.00</td>
</tr>
<tr>
<td>Emotional Resources Scale</td>
<td>48.84</td>
<td>33.00</td>
<td>60.00</td>
<td>7.91</td>
<td>27.00</td>
</tr>
<tr>
<td>Spiritual/Philosophical</td>
<td>53.65</td>
<td>36.00</td>
<td>71.00</td>
<td>9.40</td>
<td>35.00</td>
</tr>
<tr>
<td>Physical Resources Scale</td>
<td>48.61</td>
<td>30.00</td>
<td>75.00</td>
<td>10.08</td>
<td>45.00</td>
</tr>
</tbody>
</table>
Table 17
Female Means and Standard Deviations of the Coping Resources Inventory

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Coping Resources (n = 31)</td>
<td>48.16</td>
<td>27.00</td>
<td>69.00</td>
<td>11.11</td>
<td>42.00</td>
</tr>
<tr>
<td>Cognitive Resources Scale</td>
<td>49.10</td>
<td>27.00</td>
<td>68.00</td>
<td>10.57</td>
<td>41.00</td>
</tr>
<tr>
<td>Social Resources Scale</td>
<td>47.74</td>
<td>28.00</td>
<td>68.00</td>
<td>9.01</td>
<td>40.00</td>
</tr>
<tr>
<td>Emotional Resources Scale</td>
<td>49.29</td>
<td>30.00</td>
<td>72.00</td>
<td>11.56</td>
<td>42.00</td>
</tr>
<tr>
<td>Spiritual/Philosophical Resources Scale</td>
<td>50.29</td>
<td>27.00</td>
<td>67.00</td>
<td>10.21</td>
<td>40.00</td>
</tr>
<tr>
<td>Physical Resources Scale</td>
<td>46.45</td>
<td>31.00</td>
<td>69.00</td>
<td>9.17</td>
<td>38.00</td>
</tr>
</tbody>
</table>

The mean score obtained for the Coping Resources Inventory for male participants was 52.03, which is slightly above the average of 50.00 calculated by Hammer and Marting (1988) during their research study. The females’ average scores for the Coping Resources Inventory are 48.16 which, although not significant, are slightly below the mean of 50.00 that was set by Hammer and Marting (1988). Thus the males scored 3.87 standard scores higher than the female participants (Table 18).

The lowest score for both male and female participants was on the Physical Resources Scale with the males obtaining a standard score of 48.61, and the females obtaining a standard score of 46.45. When looking at literature presented in Chapter 4 the results of the current study correlatates well with a study done by Irvine (1996) who found that the psychological responses of men to perceived infertility can be substantial feelings of personal and sexual inadequacy, while infertility in females seems to affect the socially constructed ideal and identity of the woman as a ‘natural mother’ and the ‘one who nourishes her child with the riches of her body’. Similarly, the symbolic meaning of the
pregnant body as that which is ‘nurturant, natural, and healthy’, provides a cultural ideal. In comparison with this idea infertile men and women may interpret themselves, their bodies and their identities as being defective or abnormal (Helman, 2001).

The highest score for male participants was 54.58 which they obtained on the Cognitive Resources Scale, while the females scored highest on the Spiritual/Philosophical subscale, obtaining a score of 50.29. According to Compton (2005) religion provides social support and enhanced self-esteem through a self-verification process as the person associates with others who share his or her values. Furthermore, females are found to traditionally be more concerned with social affairs while men are more concerned with achievement and power (Diener & Fujita, 1995). In addition, Lu (2000) found that women are more satisfied than men with their social relations and daily lives. The above research underlines the fact that women scored highest on the Spiritual/Philosophical subscale. Furthermore, the researcher feels that males are known to be more rational and analytic than females and this is underlined in a study done by Diener, Sandvik and Larsen (1985c) who postulated that men were expected to be less emotional as prescribed by cultural experience. It is thus not surprising that the males scored highest on the Cognitive Resources Scale. The above mentioned research underlines both the males’ and females’ highest scores for coping resources utilized during a stressful life event such as infertility treatment.

In general the males obtained above average scores (>50) on all subscales as well as their total score for the Coping Resources Inventory except for their Emotional and Physical Resources Subscales in which they obtained slightly below average standard scores. The female participants on the other hand obtained below average scores (<50) on all as well as their total score for the Coping Resources Inventory except for their Spiritual/Philosophical Resources Scale in which they obtained a slightly above average mean score. These scores indicate that although the females’ scores were slightly lower overall, both the males and females experienced relatively average levels of coping resources.
Lazarus and Folkman (1984) identified two general coping styles in which individuals cope with stressful situations, namely: (a) *problem-focused* coping and (b) *emotion-focused* coping. Problem-focused coping is used more regularly in a situation where one feels that there is something that can be done about a particular problem or challenge. However, when a problem or challenge is appraised as beyond an individual’s control they are more likely to rely on emotion-focused coping (Folkman & Lazarus, 1980; Vitaliano, DeWolfe, Maiuro, Russo & Katon, 1990). Connell, Janevic and Gallant (2001) found that women are more likely to use emotion-focused coping, while men are more inclined to use problem-focused coping styles. These findings further seems to be underlined in the fact that the only subscale of the Coping Resources Inventory in the current study that the females scored higher on than the males was the Emotional Resources Scale, while the males’ highest score was on the Cognitive Resources Scale. However, no speculation can be made as to which of the male or female groups perceived the diagnosis of infertility as more stressful or challenging. Further studies would need to be conducted in this regard to confirm any hypothesis made in this regard.

The differences in the scores obtained by the male and female participants in this study are reflected in Table 18 below. Table 18 is followed by a discussion of the conclusions drawn regarding the differences in the scores obtained by the male and female participants in this study.
Table 18

Difference in Means and Standard Deviations of Males and Females on the Coping Resources Inventory

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Difference</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>t-statistic</th>
<th>p-value</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Coping Resources (n = 31)</td>
<td>3.87</td>
<td>1.00</td>
<td>10.00</td>
<td>-0.07</td>
<td>1.38</td>
<td>.174</td>
<td>n/a</td>
</tr>
<tr>
<td>Cognitive Resources Scale</td>
<td>5.48</td>
<td>4.00</td>
<td>1.00</td>
<td>-1.56</td>
<td>2.20</td>
<td>.032*</td>
<td>0.56</td>
</tr>
<tr>
<td>Social Resources Scale</td>
<td>4.68</td>
<td>-9.00</td>
<td>4.00</td>
<td>2.63</td>
<td>1.77</td>
<td>.082</td>
<td>n/a</td>
</tr>
<tr>
<td>Emotional Resources Scale</td>
<td>-0.1145</td>
<td>3.00</td>
<td>-12.00</td>
<td>-3.64</td>
<td>-0.18</td>
<td>.858</td>
<td>n/a</td>
</tr>
<tr>
<td>Spiritual/Philosophical Resources Scale</td>
<td>3.35</td>
<td>9.00</td>
<td>4.00</td>
<td>-0.81</td>
<td>1.35</td>
<td>.183</td>
<td>n/a</td>
</tr>
<tr>
<td>Physical Resources Scale</td>
<td>2.16</td>
<td>-1.00</td>
<td>6.00</td>
<td>0.91</td>
<td>0.88</td>
<td>.381</td>
<td>n/a</td>
</tr>
</tbody>
</table>

The males in this research study obtained higher mean scores than the females on the Cognitive Resources, Social Resources, Spiritual/Philosophical Resources and Physical Resources. According to Lu and Chen (1996) greater social support is related to greater use of other kinds of coping behaviour. Uchino, Cacioppo and Kiecolt-Glaser (1996) stated that a strong network of friends and family who provide social support could assist a person to maintain good health when faced with a stressful life event such as infertility. Thus the fact that the males scores 4.68 scaled points higher on the Social Resources

11 * significant p-value
Scale than the females might have contributed to the male group scoring higher overall levels of perceived coping resources than the females. The females however, obtained a higher mean score on the Emotional Resources Scale than the males. Frederickson (1998) states that certain discrete positive emotions such as joy, interest, contentment, pride, and love all share the ability to broaden one’s thought-action repertoires as well as to build their enduring personal resources, ranging from physical and intellectual resources to social and psychological resources. As discussed previously in this chapter women tend to feel emotions more intensely. Females also seemed to be emotionally more aware and the researcher thus hypothesised that the females felt they had more emotional resources available to utilize than the male participants in this study.

As mentioned in Chapter 6, a p-value of .05 is needed in order to assess the statistical significance of the results computed for the fifth aim of this study. This value was utilized as a means of establishing statistical significance as it is the standard used in most psychological research reports (Harris, 1998). The differences in results obtained on the CRI indicated a significant difference between the male and female groups’ mean for the Cognitive Resources Scale. The p-value which needs to be $p < .050$ in order to be statistically significant, was $p = .032$ for this particular subscale. The Cohen’s $d$ score that is calculated in order to establish the practical significance of the differences between the two scores are determined by the p-value which was $d = 0.56$, indicating a moderate difference where $2.00 – 0.50$ indicates a small difference, $0.50 – 0.80$ signifies a moderate difference and $d > 0.80$ indicates a large difference in scores.

The chi square statistical analysis done indicated no profile differences between the male and female distribution of scores according to the three categories: (a) below average, (b) average, and (c) above average. For a normal distribution curve, 25% of the sample needs to fall in the below average range, 50% needs to fall in the average range, and 25% needs to fall in the above average range. This even distribution indicates that the sample’s coping resources distribution is comparable to that of a normal population experiencing no significant life stressor. In the next section the researcher explores the differences that were obtained by the male and female samples on the Sense of Coherence Scale.
Sense of Coherence

A summary of the means and standard deviations obtained by the males are presented in Table 19 while the females’ results are presented in Table 20.

Table 19
Male Means and Standard Deviations of the Sense of Coherence Scale

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense of Coherence (n = 31)</td>
<td>151.90</td>
<td>94.00</td>
<td>185.00</td>
<td>21.71</td>
<td>91.00</td>
</tr>
</tbody>
</table>

Table 20
Female Means and Standard Deviations of the Sense of Coherence Scale

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense of Coherence (n = 31)</td>
<td>134.52</td>
<td>66.00</td>
<td>174.00</td>
<td>28.69</td>
<td>108.00</td>
</tr>
</tbody>
</table>

The average score obtained for the Sense of Coherence Scale for the male sample was 151.90 and 134.52 for the female participants. Thus it can be seen that the males obtained a score that is 15.38 standard points above the mean of 136.52 calculated during a study done by Wissing and Van Eeden (1997). Interestingly, the females’ average score of 134.52 was 2.00 standard points below the mean of 136.52 calculated by Wissing and Van Eeden (1997). The males thus scored 17.38 standard scores higher than that of the female participants in the current sample (Table 21). These scores indicate that although the females’ scores were lower than that of the males, both groups, that is, both the males and females in this study indicated an average level of sense of coherence. These findings correlate well with a study conducted by Schmidt, Bovine, Thornton-Thomsen, Bleiberg, Held, Rasmussen and Nibble Andersen (2003) in which it was found that no gender differences existed in the evaluation of treatment received. In other words, neither the women nor men in their study indicated a greater or lesser sense of satisfaction.
Table 21 highlights the differences in scores obtained by the male and female participants in this study. A discussion regarding the conclusions can be drawn from Table 21 which are presented below.

Table 21
Difference in Means and Standard Deviations of Males and Females on the Sense of Coherence Scale

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Difference</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>t-statistic</th>
<th>p-value</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense of Coherence</td>
<td>17.38</td>
<td>28.00</td>
<td>11.00</td>
<td>-6.98</td>
<td>2.69</td>
<td>.009*</td>
<td>0.68</td>
</tr>
</tbody>
</table>

The males obtained a higher mean score on the Sense of Coherence Scale than the females. By calculating the p-value of the differences in scores on the SOC-29, a significant difference between the male and female groups’ mean for sense of coherence was found. The p-value was p = .009 for this particular measure which indicates a significant difference in the mean scores of the two groups. The Cohen’s d score that was calculated in order to establish the practical significance of the differences determined by the p-value was d = 0.68, indicating a moderate difference. More specifically a p-value falling between 2.0 – 0.5 indicates a small difference, a p-value falling between 0.5 – 0.8 signifies a moderate difference and a p-value of 0.8 or larger indicates a large difference in scores.

The chi square statistical analysis is done to indicated whether a sample, if divided into three categories (i.e., below average, average and above average) is distributed evenly across these three categories. In the current study no profile differences between male and female chi square distribution scores for the SOC-29 was found. The next section looks at the differences in scores obtained for the Satisfaction with Life Scale.

12 *significant p-value
Satisfaction with Life

A summary of the means and standard deviations obtained by the males are presented in Table 22 while the females’ results are presented in Table 23.

Table 22
Male Means and Standard Deviations of the Satisfaction with Life Scale

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with Life</td>
<td>25.16</td>
<td>10.00</td>
<td>33.00</td>
<td>5.67</td>
<td>23.00</td>
</tr>
<tr>
<td>(n = 31)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 23
Female Means and Standard Deviations of the Satisfaction with Life Scale

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with Life</td>
<td>25.35</td>
<td>13.00</td>
<td>35.00</td>
<td>5.98</td>
<td>17.00</td>
</tr>
<tr>
<td>(n = 31)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean score obtained for the Satisfaction with Life Scale for the male participants was 25.16, while the females obtained a mean score of 25.35. It can therefore be concluded that the females’ mean score of 25.35 was 0.19 standard points above that of 25.16 obtained by the male participants (Table 24). This indicates that the mean scores for both groups falls within the “slight satisfaction with life” range. Comparing the current descriptive statistics of the Satisfaction with Life Scale with those found by Wissing and Van Eeden (1997) in their study (for e.g., Wissing and Van Eeden obtained a mean score of 23.45 for the SWLS), it can be concluded that the current sample’s mean for both the male and female groups was above 23.45 and therefore both groups can be described as experiencing average levels of satisfaction with life. Wissing and Van Eeden (1997) found a standard deviation of 6.32 in their study. The standard deviation obtained in the current study is 5.98. These scores indicate that although the males’ standard scores were lower than that of the females, both groups were found to experience average levels.
of satisfaction with life according to the Satisfaction with Life Scale. When comparing these results with literature presented in Chapter 5 on studies done comparing gender and subjective well-being, it can be seen that for example according to Compton (2005) all possible answers to whether gender plays a role in overall well-being of an individual was found. However, Lu (2000) and Nolen-Hoeksema and Rusting’s (1999) research correlated well with the current study in that they concluded that no significant differences could be found between men and women in self-reported happiness or life satisfaction.

When looking at the differences in scores obtained by the male and female participants in this study the following conclusions can be drawn from Table 24.

Table 24
Difference in Means and Standard Deviations of Males and Females on the Satisfaction with Life Scale

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Difference</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>t-statistic</th>
<th>p-value</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with Life</td>
<td>-0.19</td>
<td>-3.00</td>
<td>-2.00</td>
<td>-0.31</td>
<td>-0.13</td>
<td>.896</td>
<td>n/a</td>
</tr>
<tr>
<td>(n = 31)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The females obtained a higher mean score on the Satisfaction with Life Scale than the males. No significant difference was found in the p-value obtained for the differences in scores on the SWLS for both the male and female groups’ means. The p-value of $p = .896$ was not statistically significant for this particular measure and thus the Cohen’s $d$ score was not calculated.

When dividing the male and female sample into the three categories (i.e., below average, average and above average) the chi square statistical analysis done indicated no profile differences between the male and female distribution of scores according to these three categories on the results of the SWLS. This even distribution indicates that the sample’s satisfaction with life distribution is comparable to that of a normal population experiencing no significant life stressor. It is important to take note that Schmidt et al.
(2003) found that patients relate satisfaction with life positively with a treatment-related pregnancy or delivery. It is thus possible that some couples might have received a diagnosis of pregnancy while on treatment in the time span they took to complete the questionnaires, thus affecting their overall satisfaction with life positively. The researcher thus concluded that this, as well as the sample having ample available resources as measured by the Coping Resources Inventory (Table 10), might have contributed to them having a normal distribution curve as measured by the chi square statistical analysis.

In the next and final section of aim 5 the researcher looks at the differences obtained by the male and female participants on the Affectometer-2 Scale.

**Affectometer-2**

A summary of the means and standard deviations obtained by the males are presented in Table 25 while the females’ results are presented in Table 26.

**Table 25**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive – Negative Affect Balance (n = 31)</td>
<td>35.13</td>
<td>-23.00</td>
<td>66.00</td>
<td>21.30</td>
<td>89.00</td>
</tr>
</tbody>
</table>

**Table 26**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive – Negative Affect Balance (n = 31)</td>
<td>23.81</td>
<td>-32.00</td>
<td>79.00</td>
<td>28.72</td>
<td>111.00</td>
</tr>
</tbody>
</table>

The average score of the Positive-Negative Balance (i.e., global happiness) was 35.13 for the males with the females scoring slightly lower with an obtained score of 23.81
which indicates a slightly above neutral (i.e., neutral being a score of 16) Positive Affect for both groups. It can thus be concluded that the current study correlates well with that of Wissing and Van Eeden (1997) who reported a total global happiness mean of 29.50 in their study. The males in the current study thus scored 5.63 scaled points above the mean of 29.50 calculated by Wissing and Van Eeden (1997). The females scored 5.69 scaled points below the mean of the latter study (Mean = 29.50). Using their study as a norm for the present research study, it appears that the male and female patients in this study experienced similar levels of global happiness to the respondents in the study of Wissing and Van Eeden (1997). It can thus be said that although the males scored 11.32 scaled points higher (Table 27) on average than the female sample, both groups however perceived themselves to be experiencing average levels of global happiness. These results were surprising, as mentioned in Chapter 5, Rice (1998) found that stress drains energy and motivation if a perceived threat continues over an extended period of time, without an apparent end to the stressful situation. In the case of patients undergoing infertility treatment, severe stress is experienced due to, for example, repeated treatment cycle’s, failed treatment cycles, socio-economic problems and societal pressure to produce (Daniluk & Tench, 2007; Ferreira, 2005). The researcher thus expected the participants in the current sample to have experienced lower levels of global happiness. The differences in the means and standard deviations obtained by the male and female participants in the current study are reflected in Table 27. A discussion regarding the conclusions that can be drawn from Table 27 are also presented below.

Table 27

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Difference</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>t-statistic</th>
<th>p-value</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive – Negative Affect Balance (n = 31)</td>
<td>11.32</td>
<td>9.00</td>
<td>-13.00</td>
<td>-7.42</td>
<td>1.76</td>
<td>.083</td>
<td>n/a</td>
</tr>
</tbody>
</table>
The males obtained a higher mean score on the Affectometer-2 Scale than the females. As discussed in Chapter 5 it can be seen that Daniluk (1997) found that infertility is linked to a dramatic change in women’s social relationships compared to relatively minor changes in the social relationships of men. This was also confirmed on the Coping Resources Inventory during the current study (Table 16 and 17). As a result, it seems that women experiencing infertility often feel a sense of isolation and alienation from female friends and family (Daniluk, 1997). It is speculated that this feeling of isolation could have been a negative contributing factor affecting the female sample’s level of global happiness. This possibility of women experiencing lower levels of global happiness was also confirmed in a research study conducted by Salovey, Rothman, Detweiler and Steward (2000) where it was found that individuals who have few perceived resources (such as the females in the current sample) (Table 17), appear to be more susceptible to illness and mood disturbances when faced with higher stress levels than individuals who have a great deal of social support. Furthermore, Beutel, Kupfer, Kirchmeyer, Kehde, Kohn, Schroeder-Printzen, Gips, Herrero and Weidner (1999) did a study where they compared treatment-related stresses of couples undergoing In-Vitro Fertilization (IVF) or Intra-Cytoplasmic Sperm Injection (ICSI) treatment to identify gender differences as well as risk factors for depression. They found that women appear to be more distressed by Assisted Reproductive Technology (ART) treatment than men.

Another explanation put forward for women experiencing lower levels of global happiness by Diener, Larsen, Levine and Emmons (1985b) is that both positive and negative emotions are experienced in equal intensity within an individual. However, Argyle (1999) found that women reported feeling emotions more intensely. Diener, Larsen, Levine and Emmons (1985b) further found that there were clear differences in the range of emotional intensity displayed between males and females. Their study also indicated that women showed emotions more intensely, which led the researchers to postulate that men were culturally expected to be less emotional. When reflecting this information against the findings of the current study it can be said that men appear to show higher levels of global happiness due to the cultural expectations placed on them. On the other hand it can also be speculated that the women in this study could have reported lower levels of global happiness as they reported experiencing the stressor of
infertility more intensely than the males in this study. It is however important to refrain from drawing definite conclusions without further research done in this area.

However, no significant difference was found as indicated by the p-value obtained when comparing the differences in scores obtained by the male group and female group on the AFM-2. The p-value of p = .083 was not statistically significant for this particular measure and thus the Cohen’s d score could not be calculated. The chi square statistical analysis done indicated no profile differences between male and female distribution of scores according to the three categories (i.e., below average, average, and above average) on the AFM-2.

When reflecting back on the results obtained in this chapter it can be said that the sample as a whole, both males and females, experience average to slightly above average levels of psychofortology. The four constructs constituting psychofortology for the purposes of this study, namely: (a) coping resources, (b) sense of coherence, (c) satisfaction with life, and (d) life happiness were measured by the CRI (coping resources), SOC-29 (sense of coherence), SWLS (satisfaction with life), and AFM-2 (life happiness) respectively. Coping includes coping resources and sense of coherence while subjective well-being is made up of the constructs satisfaction with life and life happiness. It can be said that the sample in general experienced average levels of coping and subjective well-being. Furthermore, on dividing the sample into a male group and a female group, very little difference was noted in the psychofortology of males and females undergoing infertility treatment. More specifically, the men scored slightly higher on coping resources (CRI), sense of coherence (SOC-29) and life happiness (AFM-2) than the females, while the females scored slightly higher than the males on satisfaction with life (SWLS). It can thus be concluded that the male participants in this study experienced slightly higher levels of coping than the females, while the males and females experienced similar levels of subjective well-being.
7.2 Conclusion

In this chapter the results of the measures (i.e., CRI, SOC-29, SWLS, and AFM-2) have been presented and discussed. The findings have been linked to theory and previous research studies which have been reviewed in the previous chapters of this study. Some of the findings in this study correlate well with previous research and confirmed theoretical as well as earlier research findings, while other findings appear to be unique to this particular sample.

The overall scores on the CRI, SOC-29, SWLS and the AFM-2 indicated slightly above average levels of general health and subjective well-being of this sample of infertility patients. This seems to indicate that although the participants had suffered a condition that threatened their identity and mortality both as individuals and as couples in society, they interestingly experienced their life-situation in a positive light at the time they completed the study’s questionnaires.

On comparing the results of the male group and the female group of the particular sample it was found that although both groups obtained relatively average mean scores in general, the men scored slightly higher on the CRI, SOC-29 and AFM-2, while the females scored slightly higher than the males on the SWLS. It must be noted that although the study also aimed at comparing the coping resources, sense of coherence, satisfaction with life and life happiness of males and females undergoing infertility treatment, it did not aim to explore the relationship between the different measures that were used for this research project. Thus the researcher did not attempt to explore any possible relationships between the scores of the different standardized measures utilized in this study. The value and limitations of this study, as well as suggestions for future research is discussed in Chapter 8 that follows.
CHAPTER 8
CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

8.0 Introduction

Having presented and discussed the results of the study in Chapter 7 it is necessary to draw certain conclusions based on these findings. This chapter provides a summary of the main findings along with a discussion of the value and limitations of the study. Recommendations for future research are also included in this chapter.

8.1 Aims of the Study Revisited

This study aimed to explore and describe the coping resources, sense of coherence, satisfaction with life and life happiness of men and women undergoing infertility treatment at a privately managed health care unit in the Nelson Mandela Metropole\textsuperscript{13} area. These sub-constructs were decided upon and constitute the construct of psychofortology for the purposes of this study. Psychofortology was conceptualized as coping and subjective well-being for the purposes of this study. Coping was conceptualized as coping resources and sense of coherence and subjective well-being as satisfaction with life and life happiness. Thus these four sub-constructs described in the five aims of this study constitute the construct of psychofortology. The five main aims of this research study were:

1. To explore and describe the coping resources of men and women undergoing infertility treatment.
2. To explore and describe the sense of coherence of men and women undergoing infertility treatment.
3. To explore and describe the satisfaction with life experienced by men and women undergoing infertility treatment.
4. To explore and describe the life happiness of men and women undergoing infertility treatment.

\textsuperscript{13} Previously known as Port Elizabeth
5. To compare the coping resources, sense of coherence, satisfaction with life and life happiness of males and females undergoing infertility treatment.

The conclusions that were drawn from this study will now be addressed in terms of the above mentioned aims.

### 8.2 Conclusions Based on the Aims of the Present Research

The conclusions drawn from this study are addressed in terms of the main aims of this study as mentioned in the previous section.

#### 8.2.1 Description of the Coping Resources of the Sample

The first aim of this study was to explore and describe the coping resources of the men and women that constituted the sample of the current study while they were undergoing infertility treatment. The coping resources of the patients undergoing infertility treatment were assessed using the Coping Resources Inventory (CRI) which was developed by Hammer and Marting (1988). The mean obtained by the current sample for the total of the coping resources scale was 50.10 which compares well with the mean of 50.00 which was established for the CRI by Hammer and Marting (1988). According to these results obtained from the participating sample it seems as if they perceived themselves as having average levels of coping resources.

The means for the cognitive, social and spiritual/philosophical subscales were all clustered slightly above the mean of 50.00, while the means for the emotional and physical subscales were clustered together slightly below the mean of 50.00. Both the means of the Cognitive Resources subscale and the Spiritual/Philosophical Resource subscale were slightly above the total mean score obtained on the CRI of this sample. This indicates that cognitions and spirituality seem to contribute positively to one’s perceived levels of coping resources. As this was an exploratory-descriptive research study the researcher was unable to draw conclusions as to why the participants in the current study perceived their coping resources to be average despite their very stressful life event experienced.

Furthermore, the participants obtained the highest mean score on the Spiritual/Philosophical Resource subscale, and obtained the lowest mean score on the
Physical Resources subscale. This information compares well to other studies done on the South African population (Brown, 2002; Cairns, 2001; Hatuell, 2004; Madhoo, 1999). This subsection discussed the coping resources of the infertility patients in the current study. The following subsection describes the sense of coherence of the particular sample.

8.2.2 Description of the Sense of Coherence of the Sample

The second aim of this research study was to explore and describe the sense of coherence of the men and women in this sample. According to the results obtained on the SOC-29, the mean of 143.21 that was obtained was slightly higher than the mean of 136.52 that was obtained in a study done by Wissing and Van Eeden (1997). It therefore appears that the male and female participants in this study experienced a higher sense of coherence than the respondents in the study done by Wissing and Van Eeden (1997). As no established norms exist for the SOC of infertility patients in South Africa at this stage, it is difficult to assess whether the mean score for this sample is significantly high or not. However, when comparing it to the mean obtained by similar research studies as outlined in the literature from both international and South African studies, the researcher concluded that the individuals who participated in the current study have a slightly above average sense of coherence. This might indicate that the patients in the current study have had the ability to take their stressful life experience of infertility and find meaning in the experience. This speculation is well in line with the literature that was discussed in Chapter 4 which indicated that there is a possibility that the experience of stressful life events and trauma such as a diagnosis of infertility may provoke positive psychological changes within an individual (Affleck & Tennen, 1996; Schaefer & Moos, 1992; Tedeschi & Calhoun, 1995). It is speculated that the above findings might be true for the current sample and that their overall sense of coherence may have increased due to their exposure to the changes brought about by their diagnosis of infertility. Furthermore, evidence of the importance of spirituality as a resource for the current sample suggested that the meaningfulness component of the SOC-29 was likely to have been relatively high, since finding meaning in difficulty is inherent to spirituality (Compton, 2005). It
therefore seems that the current sample was able to construct meaning and a sense of purpose from their circumstances.

This section described the sense of coherence of the current sample. The following section describes the satisfaction with life of the males and females in this study who were undergoing infertility treatment.

### 8.2.3 Description of the Satisfaction with Life of the Sample

The third aim of the current study was to explore and describe the satisfaction with life as experienced by the men and women in the current study. Satisfaction with life was assessed using the Satisfaction with Life Scale (SWLS) which measures the subjective well-being of the respondents on a cognitive, judgemental level. Participants in this study obtained a mean score of 25.26. Once again there are no established norms for the SOC of infertility patients in South Africa at this stage. However, when comparing it to the mean obtained by similar research studies like that of Wissing and Van Eeden (1997), their mean obtained was 23.45 which was only 1.81 units lower than the mean score of 25.26 which was obtained for the current sample. The current sample’s mean score thus fell into the “slight satisfaction with life” range, indicating that the present sample perceived themselves as having fairly average levels of satisfaction with life. It may be speculated that since the respondents in this study are married (Table 5 in Chapter 6) and 95.16% of the participants employed (Table 6 in Chapter 6) they have already achieved in other areas of their lives and this might have increased their self-esteem and thus their satisfaction with life in general as well.

Most participants (81%) (Table 13) experienced satisfaction with life levels ranging from ‘slightly satisfied’ to ‘extreme satisfaction with life’. The researcher found these results to be surprising as all the participants in the sample had just recently undergone the stressful life event of being diagnosed with infertility as well as having received infertility treatment. However, although much has been written about the negative effect of stress on physical and emotional health there is growing recognition that there are positive as well as negative outcomes to stress (Park, Cohen & Murch, 1996). As there are no established norm scores for the SWLS for South African patients undergoing infertility treatment at this stage it is difficult to determine whether or not the mean score
for this sample is generalisable to the larger population of patients undergoing infertility treatment in South Africa.

The following section discusses the life happiness of the current sample of males and females undergoing infertility treatment.

8.2.4 Description of the Life Happiness of the Sample

The fourth aim of this research study was to explore and describe the life happiness of the current sample. Life happiness was assessed using the Affectometer-2 (AFM-2) which measures the subjective well-being of the respondents on an affective level. Thus also giving an indication of the general happiness of an individual. The Affectometer-2 is scored by subtracting a respondents total positive affect score from their total negative affect scores in order to obtain a positive-negative balance or a global happiness score. The average score of the Positive-Negative Balance (i.e., global happiness) obtained by the current sample was 29.47 which indicated that the sample perceived themselves to be experiencing average levels of global happiness.

As there are no established norms for the AFM-2 on infertility patients in South Africa at this stage the results of this study were compared to results obtained in a study that was conducted by Wissing and Van Eeden (1997). In their study, Wissing and Van Eeden (1997) reported a total global happiness mean of 29.50 which showed a difference of only 0.03 between the mean of the latter study (Mean = 29.50) and the current study (Mean = 29.47). Using their study as a norm for the present research study, it was concluded that the male and female patients in this study experienced similar or average levels of global happiness.

In conclusion to the above four aims it can be seen that the results obtained from the CRI, SOC-29, SWLS and AFM-2 were all average to slightly above average. It can thus be concluded that the sample as a whole, that is both the males and females in this study, experienced average levels of coping and well-being in general. The next section describes the differences in coping resources, sense of coherence, satisfaction with life and life happiness of the males and females in the current sample.
8.2.5 Description of the Differences in Coping Resources, Sense of Coherence, Satisfaction with Life and Life Happiness of the Males and Females of this Sample.

The fifth aim of this study was to compare the coping resources, sense of coherence, satisfaction with life and life happiness of males and females undergoing infertility treatment. It is important to take note that as this study was exploratory-descriptive in nature. Therefore, no casual or explanatory links were established by the researcher.

The mean score obtained for the Coping Resources Inventory for male participants was 52.03 which was slightly above the average of 50.00 calculated by Hammer and Marting (1988), while the females’ average scores for the Coping Resources Inventory was 48.16 which is slightly below the mean obtained by Hammer and Marting (1988). The lowest score for both male and female participants was on the Physical Resources Scale, while the highest score for the male participants was obtained on the Cognitive Resources Scale. The females scored highest on the Spiritual/Philosophical subscale. In general the males obtained above average scores (>50) on all subscales and on their total score for the Coping Resources Inventory while their Emotional and Physical Resources Subscales scored slightly below average. The female participants on the other hand obtained below average scores (<50) on all, as well as on their total score for the Coping Resources Inventory while they scored above the mean of 50.00 on the Spiritual/Philosophical Resources Scale. When comparing these scores to the findings of Hammer and Marting’s (1988) study it can be seen that although the females’ scores were slightly lower overall both the males and females experienced relatively average levels of coping resources. The differences in results obtained on the CRI indicated only a significant difference in scores between the male and female groups’ mean for the Cognitive Resources Scale.

The average score obtained for the Sense of Coherence Scale for the male sample was 151.90 and 134.52 for the female participants. Thus the males obtained a score that is 15.38 standard points above the mean of 136.52 that was calculated during a study done by Wissing and Van Eeden (1997), while the females’ average score of 134.52 was 2.00 standard points below the mean of Wissing and Van Eeden (1997). Although the scores indicate that females’ scores were lower than that of the males, and although the
calculated p-value indicated a significant difference in male and female scores obtained, both groups seemed to experience average levels of sense of coherence. These findings correlate well with the literature that was presented in Chapter 5 where no gender differences in the evaluation of treatment was found thus concluding that neither women nor men were more satisfied (Schmidt, Holstein, Boivin, Tjornhøj-Thomsen, Blaabjerg, Hald, Rasmussen & Nyboe Andersen, 2003).

The mean score obtained for the Satisfaction with Life Scale for the male participants was 25.16, while the females obtained a mean score of 25.35. This indicates that the mean scores for both groups falls within the “slight satisfaction with life” range. On comparing the current results with that of Wissing and Van Eeden’s (1997) study it was concluded that although the current sample’s mean for both groups was above the 23.45 that was obtained by Wissing and Van Eeden, both the male and female groups were experiencing average levels of satisfaction with life. This was however the only measure in which the females obtained a higher mean score than the males. Furthermore, the differences in results did not indicate a significant difference between the male and female groups’ means scores.

The average score of the Positive-Negative Balance (i.e., global happiness) was 35.13 for the males with the females obtaining a slightly lower score of 23.81. It was thus concluded that the current study correlates well with that of Wissing and Van Eeden (1997) who reported a total global happiness mean score of 29.50. Although the males scored higher on their overall levels of happiness than the females, both groups perceived themselves to be experiencing average levels of global happiness. The differences in results as calculated through the p-value did not indicate any significant differences between the mean scores of these two groups. The researcher is of opinion that the lower score obtained by the females on global happiness might be due to the dramatic changes in women’s social relationships that goes hand-in-hand with elevated feelings of isolation and alienation as discussed in Chapter 5. Another factor that the researcher considered in explaining the females’ lower levels of happiness was the fact that women reported feeling emotions more intensely. Thus the women could have reported lower levels of global happiness as they seemed to experience the stressor of infertility more intensely.
than the males. It is however impossible to draw any inferences or conclusions without further research done in this area.

On comparing the results of the male group and the female group of the particular sample it was found that although both groups obtained relatively average mean scores in general, the men scored slightly higher on the CRI, SOC-29 and AFM-2, while the females scored slightly higher than the males on the SWLS. It must be noted that aim 5 of this study compared the coping resources, sense of coherence, satisfaction with life and life happiness of males and females undergoing infertility treatment. It did not however aim to explore the relationship between the different measures that were used for this research project. The value of the research findings as discussed in the above section will be discussed in the next subsection.

**8.3 Value of the Research**

This study contributes to a body of research rooted in psychofortology that investigated the coping and subjective well-being of patients undergoing a stressful life event such as infertility treatment. According to Folkman and Moskowitz (2000, p.652), psychologists need to understand the adaptational significance of positive affect in the midst of stressful life events more clearly. Psychologists also need to learn how people generate and sustain positive affect under these conditions. Concepts like coping resources, sense of coherence, satisfaction with life and life happiness provide productive theories for research into these issues.

The value of the study lies in that it provided more information regarding the coping and subjective well-being of patients undergoing infertility treatment in the Nelson Mandela Metropole\(^{14}\) area. Another value and strength of the current study is that it looked at the psychofortology of both the males and females, rather than the traditional view of only looking at female distress and well-being in Alternative Reproductive Technology and infertility treatment cycles. The data collected during this study served to fulfill the aims of this study as it provided valuable insight into the coping and subjective well-being of patients undergoing infertility treatment. It also served to identify the strengths of these individuals. This study, by looking at the dimensions of the Coping

\(^{14}\) Previously known as Port Elizabeth
Resources Inventory (i.e., cognitive, social, emotional, spiritual, and physical) and the elements of the sense of coherence (i.e., comprehensibility, manageability, and meaningfulness), also contributes to the basic understanding and promotion of some of the factors that allow infertility patients to cope better with stressors, thus increasing their subjective well-being. Although the participants in this study showed average levels of coping and subjective well-being, the results show that there may be a dire need for support, not only from family and friends, but also from professionals working in this field. There also seems to be a need in this field for a strong religious or spiritual base in order to help individuals as well as couples to cope with, and accept negative results. The results of this study thus point to the need for stress management in order to help individuals deal with their stress and develop coping mechanisms in general. By developing workshops and pre-treatment courses that are based on the results of this study and in addressing the aforementioned dimensions and elements, the participating Infertility and Wellness Clinic may assist their infertility patients to increase their psychofortology in general. The findings of this study, which will be made available to the participating Infertility and Wellness Clinic, may furthermore provide useful information regarding their understanding and counseling of patients undergoing infertility treatment. The results of this study indicated that the patients who constituted the sample for this study are experiencing some level of coping and subjective well-being. However, a need was expressed to start a support group for patients undergoing infertility treatment where they can share their experiences with each other. Various participants expressed an eagerness to assist each other within such a group in an attempt to refine their ways of coping with their stressful situation. The viability of starting a support group for patients on infertility treatment is being investigated.

The participants of this study received general feedback on this research study. It is hoped that the information provided may assist the participants to achieve greater awareness of their own perceptions and experiences. It may also empower them to identify and change areas in their lives that are limiting their experiences of psychofortology. It may furthermore assist patients undergoing infertility treatment to not only focus on the biological component of the person’s life while on treatment, but also on the psychological and social components thereof. Lastly, the findings may also be
useful to help persons in adjusting to their changed life situation and on how to live life to the fullest despite the diagnosis given to them. In spite of the above-mentioned values of the research there are various limitations to this study that require further discussion. This is discussed in the following section.

8.4 Limitations of the Research

Although this study achieved its aims, there are some aspects which might have served the purpose of the study better had they been done differently. In retrospect a major methodological shortcoming of this study lies in the fact that the convenience sampling procedure utilized may have resulted in a biased, non-representative sample. Due to the relatively small sample size of this study, the information gathered from the study cannot be generalized to, or representative of, the larger population. The small sample size can be ascribed to individuals not wanting to participate as they have experienced a final failed treatment cycle at the time of the sampling process. In addition, a high percentage of the individuals sampled may have fallen pregnant from the time the questionnaires were handed out to the time they completed the questionnaires. This might have made results look more positive than if an individual was unable to conceive a child through Artificial Reproductive Technology (ART) treatment.

In addition, the trustworthiness of the results of this study may have been improved had there been a wider sample of participants, especially in terms of socio-economic background. Most of the participants were from middle-class, Westernised backgrounds and perhaps the results of this study would have been different or richer had a broader group of participants been sampled. The fact that the participating sample contained mainly white individuals further limits the generalizability of the findings to other individuals or culture groups in similar situations.

Due to the voluntary nature of the study, participation depended on the willingness of the patients undergoing infertility treatment to fill out the questionnaires. It was observed that patients who were very stressed about their treatment outcome on the day of sampling were far less likely to volunteer to fill in the questionnaires than patients who were positive about the potential outcome of their treatment cycle. For example, when approached, many men expressed that the treatment cycle is strenuous enough and that
they did not want to have an additional stressor of completing questionnaires on top of this already traumatic experience. This might have influenced the results of the study by skewing it in a slightly more positive direction. It may thus be necessary to address the method of selecting participants for similar studies in future. A suggestion might be to investigate whether the clinic’s research co-ordinator who conducts the intake interviews with the patients could hand the questionnaires to every person entering treatment at the outset of treatment for completion. This will also account for a bigger sample size as completing a questionnaire would be part of the ‘official’ procedure for entering infertility treatment.

Furthermore, Lazarus (2000) found that longitudinal studies are essential in the study of coping, stress and affect as measuring these constructs at one point in time may not reflect the value given to each of the components. As this particular study was not longitudinal in nature, the fluctuations experienced by the participants in their coping resources and subjective well-being could not be accurately measured at different stages of treatment.

Snyder and Lopez (2005) questioned the validity of self-report questionnaires as participants may report that they are happy when in actual fact they are not really experiencing very high levels of subjective well-being. The researcher in an attempt to overcome this limitation thus chose to utilize a multi-method battery of assessment in an attempt to assess subjective well-being.

As the aims of this research study were only to explore and describe the results obtained on the different measures, namely the Coping Resources Inventory, the Sense of Coherence Scale, the Satisfaction with Life Scale and the Affectometer-2 Scale, the above mentioned limitations seem to be justified. Recommendations for further research are discussed in the following subsection.

8.5 Recommendations for Future Research

It is firstly recommended that the Infertility and Wellness Clinic involved in this study receive feedback on the results of this study with the aim to provide them with information on how they can incorporate these findings into the future care of patients undergoing infertility treatment. Assisting staff of the participating Infertility and
Wellness Clinic to address concepts such as coping resources, sense of coherence, satisfaction with life and life happiness could result in improved coping with the stressors inherent in fertility treatment cycles.

In addition it is recommended that the Coping Resource Inventory, the Sense of Coherence Scale, the Satisfaction with Life Scale and the Affectometer-2 Scale be used as a screening measure to identify individuals who may be more at risk for poorer adaptation after a failed treatment cycle. The participating clinic can also incorporate courses and workshops which aim to increase coping and subjective well-being amongst its patients. The researcher is of opinion that psychofortology and positive psychology programs should form part of the intake interview as well as fertility treatment program in general. The clinic can also focus on the holistic development of its patients through equipping the individuals on treatment with a sense of self that would make them feel like a wholly integrated person even after a failed treatment cycle or a negative pregnancy result. This will provide the patients with the necessary skills to rejoin society even after a negative pregnancy result.

It is also recommended that further research be conducted with the inclusion of a larger and more diverse population group that would be a more representative sample thus ensuring that the results can be more generalizable to the larger infertility population found in the South African context. As mentioned in the previous section it would be ideal to employ a longitudinal research design to investigate the consistency of the coping resources, sense of coherence, satisfaction with life and life happiness of individuals over a period of time.

As seen during the literature review of this study there is a great need in South Africa for more information that is relevant and applicable to our country’s cultural groups suffering from stressful life events such as infertility. It will also benefit this field of research to explore psychofortigenic constructs in couples experiencing infertility. Furthermore, there is scope for research in the field of couples that have abandoned treatment after numerous failed cycles and their coping mechanisms. Finally, there is also scope to look at some of the issues raised in this study from the perspective of the professionals who diagnose and work with the infertile couples.
8.6 Conclusion

This study was an attempt to explore and describe the coping resources, sense of coherence, satisfaction with life and life happiness of men and women undergoing infertility treatment at a privately managed health care unit in the Nelson Mandela Metropole\textsuperscript{15} area. While much research in the field of infertility has focused on the traditional pathological paradigm, this study employed a psychofortigenic focus which concentrated on the individuals’ ability to cope with and make sense of their unpleasant experiences during their infertility treatment cycles.

This study has succeeded in providing some insight into and understanding of the coping and well-being of men and women undergoing infertility treatment. In addition, the results of this study have identified a number of needs which can be addressed by providing guidelines for professionals and especially the individuals themselves as to how they can cope better with the treatment cycles.

The results obtained in this study also provide guidance for future research in the area of coping and subjective well-being in patients undergoing infertility treatment. Although the low level of generalizability of the results is a limitation of this study, the average mean scores obtained on all four measures and the differences found in the mean scores between men and women undergoing treatment provide valuable information regarding the sample under investigation.

Finally, infertility treatment can be described as a long journey with an uncertain outcome. Infertility can also bring many changes to your relationship as a couple. It may bond you closer together, as mutual support and understanding leads to greater sharing and intimacy. But it can also bring forth feelings of guilt and resentment, particularly if no resolution is in sight (Ferreira, 2005). Studies such as this one that emphasize salutogenic concepts such as coping resources, sense of coherence, satisfaction with life and life happiness bring hope to patients on fertility treatment as it provides a glimpse into the strength of the human psyche and spirit. On a personal note, exploring and examining the fortigenic philosophy has proved to the researcher that people undergoing a stressful life event such as infertility treatment can in the face of extreme uncertainty, and sometimes pain, still feel positive and thus serve as a source of inspiration and

\textsuperscript{15} Previously known as Post Elizabeth
strength to other individuals. The researcher was of opinion that the following quote represented a good summary of the essence and findings of the current study:

We must take care to live not merely a long life, but a full one; for living a long life requires only good fortune, but living a full life requires character. Long is the life that is fully lived; it is fulfilled only when the mind supplies its own good qualities and empowers itself from within. Seneca, the Younger (first century AD) in Compton (2005, p.241)
REFERENCES


APPENDIX A:

INFORMATION LETTER
Dear Participant

Thank you for agreeing to participate in my research project, which I am undertaking as part of the requirements for the completion of my Master’s degree in Clinical Psychology at the Nelson Mandela Metropolitan University. A literature review has indicated that although some research taps into the stress and coping patterns of individuals on infertility treatment, little research has been done to indicate the strengths of individuals, or the resources and processes men and woman use to cope with the infertility experience.

The aim of this research project is to, through the use of questionnaires, explore the coping resources, sense of coherence, satisfaction with life and subjective happiness of both males and females undergoing Artificial Reproductive Technology (ART) treatment. Permission has already been granted by Helna Strydom, the Research Co-ordinator of the Port Elizabeth Infertility and Wellness Clinic, for this research study to be conducted and is specifically aimed at identifying strengths and resources available to men and woman. I hope to get 50 – 70 participants of different ages (at least above 30 years) and backgrounds. At this stage I have identified a random sample of individuals from which I can identify the males who will form my sample pool for this study. The female sample pool has already been identified by a similar research study done in 2005. I confirm and stress that the final sample is based on demographics and should you not be included in the study, it is not because an individual’s coping mechanisms is seen to be maladaptive.

If you are selected to participate in the study you will be requested to complete a biographical questionnaire as well as four other questionnaires aimed at identifying the way in which you cope with life stressors, your general satisfaction with life and your subjective levels of happiness. The questionnaires will take approximately an hour to an hour and a half to complete and feedback will be provided in the form of a summary report and research study, which will be available at the Port Elizabeth Infertility and Wellness Clinic’s Research Co-ordinator. Furthermore individual counselling will be arranged for individuals who request it.

Your participation in this research study is completely voluntary, and you have the right to withdraw at any time. Furthermore, the information gathered from the questionnaires will be treated as strictly confidential and will only be used for research purposes. If you are agreeable to take part in this project, I would be grateful if you could complete the enclosed consent form and return it to me in the enclosed stamped, address envelope as soon as possible.
Your co-operation is greatly appreciated. Should you require any further information, please contact me on 041-5042330.

Yours faithfully

Ms Rina Ferreira  
CLINICAL PSYCHOLOGIST IN TRAINING

Dr. L. Stroud  
SUPERVISING CLINICAL PSYCHOLOGIST

Dr. J.P. Fouche  
CO-SUPERVISING COUNSELLING PSYCHOLOGIST
APPENDIX B:

CONSENT FORM
TITLE OF THE RESEARCH PROJECT: THE PSYCHOFOORTOLOGY OF MALE AND FEMALE PATIENTS UNDERGOING INFERTILITY TREATMENT

PRINCIPAL INVESTIGATOR: RINA FERREIRA

CONTACT TELEPHONE NO.: 041-5042330

<table>
<thead>
<tr>
<th>DECLARATION BY OR ON BEHALF OF PATIENT / PARTICIPANT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I, THE UNDERIGNED............................................(name)</td>
</tr>
<tr>
<td>[I.D. No:............................] the patient/participant in my capacity as</td>
</tr>
<tr>
<td>.......................................of the patient/participant [I.D.....................]</td>
</tr>
<tr>
<td>of .........................................................................</td>
</tr>
<tr>
<td>...........................................................................(address).</td>
</tr>
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<table>
<thead>
<tr>
<th>A. HEREBY CONFIRM AS FOLLOWS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I/The patient/participant was invited to participate in the abovementioned research project which is being undertaken by (name) Rina Ferreira of the Department of psychology in the Faculty of Health Sciences at the Nelson Mandela Metropolitan University.</td>
</tr>
<tr>
<td>Initial</td>
</tr>
<tr>
<td>2. The following aspects have been explained to me/ the patient/ participant:</td>
</tr>
<tr>
<td>2.1 Aim: The investigators are studying: The psychofortology of male and female patients undergoing infertility treatment.</td>
</tr>
<tr>
<td>The information will be used to/for</td>
</tr>
<tr>
<td>The completion of a MA Psychology Degree in Clinical Psychology.</td>
</tr>
<tr>
<td>Initial</td>
</tr>
<tr>
<td>2.2 Procedures: I understand that I will be required to complete a biographical questionnaire, as well as a Sense of Coherence, Satisfaction with Life, Affectometer-2 and Coping Resources inventory.</td>
</tr>
<tr>
<td>Initial</td>
</tr>
<tr>
<td>Confidentiality: My identity will not be revealed in any discussion, description or scientific publications by the investigators.</td>
</tr>
<tr>
<td>Initial</td>
</tr>
<tr>
<td>Access to findings: Any new information / or benefit that develop during the course of the study will be shared with me.</td>
</tr>
<tr>
<td>Initial</td>
</tr>
</tbody>
</table>
Voluntary participation / refusal / discontinuation: My participation is voluntary. My decision whether or not to participate will in no way affect my present or future medical care/ employment / lifestyle.

3. The information above was explained to me / the participant by

.............................................................. (name of relevant person)

In Afrikaans / English / Xhosa / Other .................................

And I am in command of this language / it was satisfactorily translated to me

by ......................................................(name of translator)

I was given the opportunity to ask questions and all these questions were

answered satisfactorily.

4. No pressure was exerted on me to consent to participation and I understand that I may withdraw at any stage without penalization.

5. Participation in this study will not result in any additional cost to myself.

B. I HEREBY CONSENT VOLUNTARILY TO PARTICIPATE IN THE ABOVEMENTIONED PROJECT.

Signed / confirmed at ......................... on ......................... 20...

(place) (date)

.......................................................... ..............................

Signature or right thumb print of participant Signature of witness
APPENDIX C:

BIOGRAPHICAL QUESTIONNAIRE
CONFIDENTIAL

BIOGRAPHICAL QUESTIONNAIRE

Please provide your particulars in the appropriate space provided or mark with an (X) in the block that contains the information applicable to you.

1. Age (in completed years) ______________

2. Date of Birth:
   __________/___________/__________
   (Year)           (Month)              (Day)

3. Gender:
   Male  Female

4. Home Language:
   English  Afrikaans  Xhosa  Other

   If Other, please specify __________________________

5. Marital Status
   Married  Single  Divorced  Widowed  Remarried

6. Employment Status
   Employed  Unemployed

   If employed, please specify your job description ______________________________

7. If applicable, please specify the medical reason associated with the infertility.
   ____________________________________________________
8. How long have you received treatment for infertility?
   ______ years _______ months (completed)

9. Which methods of Alternative Reproductive Technology programmes have you participated in? (e.g., IVF or GIFT).
   ________________________________________________________________

If you would like written feedback of the study’s general results, kindly fill in your details below. The researcher will ensure that strict confidentiality of all information will be maintained.

_____________________________________ (Name and Surname)
_______________________________________ (Contact Telephone Number)