

IN SEARCH OF A REVISED MODEL OF HEALTH:  
EXPLORING THE RELATIONSHIP BETWEEN MEANING  
AND HEALTH

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## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

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I declare that IN SEARCH OF A REVISED MODEL OF HEALTH: EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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Signature

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Date

## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

### **Abstract**

Research in Logotherapy substantiates the influence of meaning on psychological health and Psychoneuroimmunology (PNI) corroborates the effects of psychological health on physical health. This dissertation explores the relationship between meaning and physical health hypothesising that purpose affects physical health.

#### Methodology

Exploratory factor analysis (EFA), ANOVAs and stepwise regression were used to explore three possible models.

#### Results

EFA revealed four factors, purpose, fear, vitality and aggression. Significant correlations were found between purpose, vitality (0.42) and work application (0.53). Despite the significant relationship between purpose and vitality, the lack of Chi-square is significant, suggesting that additional variables should be introduced into the model.

#### Conclusion

People reporting high levels of purpose together with low levels of fear and aggression, can be characterised by high vitality and an absence of medical conditions. Future research should focus on evaluating meaning centred interventions on immunity and vitality.

Key words: Meaning, purpose, Logotherapy, Psychoneuroimmunology, health, Triangles Model Assessment online version, fear, aggression, and vitality.

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**DEDICATION**

I offer this  
To the Teacher  
Higher than any other,  
The precious Buddha.

I offer this  
To the protection  
Higher than any other,  
The precious Dharma.

I offer this  
To the guides  
Higher than any other,  
The precious Sangha.

I offer this  
to the places of refuge,  
To the Three Jewels,  
Rare and supreme.

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“there are no impregnable walls between the world that is healthy, well-fed, and well-off, and another world that is sick, malnourished, and impoverished.”

Gro Harlem Bruntland, former Prime Minister of Norway and Director of the WHO.

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**IN SEARCH OF A REVISED MODEL OF HEALTH:****Exploring the relationship between meaning and health****Chapter 1**

Attainment of the highest possible level of health is a fundamental human right enshrined in the World Health Organization (WHO) constitution (WHO, 1948). Health<sup>1</sup> is not only critical to individual wellbeing, but brings economic benefits to individuals, households and countries because people are more economically productive (WHO, 2010) and is a requirement for world peace (Beigbeder, 1998).

Universal health coverage, as defined by WHO Member States, requires all people to have access to health services — including prevention, promotion, treatment and rehabilitation — without the risk of financial hardship associated with accessing services. This “Health for All” strategy is based on five principles which are implemented through operational, normative, informational, training and research functions performed by the WHO in collaboration with the United Nations, specialised agencies, governmental health administrations and professional groups. Communities, in the spirit of self-reliance and

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<sup>1</sup> Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948. WHO definition of Health: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”(WHO, 1948).

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self-determination, are informed and involved in planning and implementation of health practices. Curative care is balanced with promotive, preventative and rehabilitative measures and both health care workers and traditional health practitioners are trained and utilised.

While these goals are commendable and perhaps utopian, in this strategy, health is the responsibility of each individual.

Health is part and parcel of economic and social development and man is the prime mover in that development. Without man development has no meaning. And without health, development has no hope of putting down its roots (Candua, 1968, p. 15, as cited in Beigbeder).

Health is central to development and, therefore, without health, man cannot develop socially or economically.

To address this challenge of achieving health, not just “for all” but especially for the individual, we are faced with myriad approaches to health, diverging definitions, differing cultural, social and ethnic constructs of health, illness, disease and sickness (Nightingale & Cromby, 1999), linguistic restrictions<sup>1</sup> and shortcomings (Von Bertalanffy, 1963; Feldman Barrett, 2009), as well as ever-changing environments and circumstances. This is

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<sup>1</sup> “Indogermanic languages can express the ‘mental’ only by physicalistic similes” (Von Bertalanffy, 1964, p. 37).

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evidenced, for example, in the leading causes of death having changed from infectious diseases to those that relate to unhealthy behaviours and lifestyles (Brannon & Feist, 2009).

The current, globally accepted definition of health from the World Health Organization (1948) defines health not by the absence of disease, but rather more positively as **complete** physical, psychological (mental and emotional) and social wellbeing. It leaves the individual with the extraordinary challenge of not only being free from disease, but to achieve health in no less than three dimensions (physical, psychological and social) simultaneously. Even in the event that the individual follows the stipulated health guidelines, there are no guarantees. Disease, ageing and death are the only certainties.

In the likely event of disease, illness or sickness, it is expected to continuously look toward that which can return us to good health and optimal well-being. The biomedical model has focused its contributions here: to the understanding and managing *physical disease*, and prolonging life. In the appropriate instances, application of this model is as obvious as it is essential, but it does not necessarily address the quality of that prolonged life other than removing the particular offending disease.

If we believe in health and wellbeing as a commodity (Gabe, Kelleher & Williams, 1994), the involvement of psychology in health is unchallenged. Psychology has, since its inception and amalgamation — that of philosophy, neurology and physiology — in the 18<sup>th</sup> century (Feldman Barrett, 2009) attempted to bridge the social and natural worlds in pursuit of *mental and emotional health*, using the conceptual tools of their time. The role of psychologists has expanded beyond traditional mental health problems. As with other

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health care disciplines, a large portion of psychology's objectives, with regards to the attainment of health, is to keep people healthy.

There is very little clarification with regards to how this level of complete health can be achieved, measured or sustained. The vast majority of available parameters are set by the biomedical model and used to determine the presence of disease, not the presence of health or wellbeing. It does seem ironic that the three measures commonly used to assess the overall health of a population are: life expectancy, infant mortality, and the number of low birth weight babies as a proportion of total births. Only during the last 30 years did the US Department of Health and Human Services and the Office of Disease Prevention and Health Promotion shift their focus by providing national objectives for promoting health as well as preventing disease.

The National Institutes for Health (NIH), an American governmental organisation, currently summarises four health measures used to monitor progress towards promoting health, preventing disease and disability, eliminating disparities, and improving quality of life. These are: (a) general health status measures include life expectancy, healthy life expectancy, years of potential life lost, number of physically and mentally unhealthy days, self-assessed health status, limitation of activity, and chronic disease prevalence; (b) measures of health-related quality of life and well-being include physical, mental, and social health-related quality of life, well-being / satisfaction, and participation in common activities; (c) determinants of health (a range of personal, social, economic, and environmental factors that influence health status), such as biology, genetics, individual behaviour, access to health services, and the environment in which people are born, live,

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learn, play, work, and age; while (d) measures of inequity and disparity are measured by race/ethnicity, gender, physical and mental ability, and geography (healthypeople, n.d.).

Unlike other disciplines, psychology should aim to address a broad spectrum of behaviours and techniques for understanding behaviour that cut across specific issues of health and disease. If psychological theory is based on an obsolete belief in the dualism of mind and body (Von Bertalanffy, 1963), psychology as a discipline will not achieve its aim. In line with the second measure and often aligned with the biomedical model, psychology has developed techniques to ease distress, but has not necessarily reduced suffering. Suffering is an unavoidable part of life.

How then does the individual navigate this labyrinth in his or her search for health? How do we remain physically, mentally, emotionally and socially healthy in the midst of life's challenges when we seem hardly able to manage to do so in the optimal and fortunate conditions? We are not amongst the poorest, we are not homeless or displaced, and we are not without resources or opportunities. Those who truly are in the direst of conditions are most certainly more vulnerable to disease; however, throughout history, there are many stories that bear testimony to the ability of individuals and groups to endure and rise above adversity, and to flourish despite the extreme physical, mental, emotional and social challenges they have had to face.

Viktor Frankl (1905-1997) referred to this ability as that which makes us uniquely human, our noetic or spiritual dimension (Frankl, 1986; Frankl, 1988). The principles of Logotherapy were lived, tested and implemented in the harsh conditions of the Nazi concentration camps as well as after liberation. Frankl demonstrated that even under

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extreme conditions, life is meaningful and a level of health can be maintained and restored through the noetic dimension (Fabry, as cited in Graber, 2004).

In his book, *Man's Search for Meaning*, Frankl (1969) writes that while exposed to inhumane and harsh conditions of the Nazi concentration camps, some inmates would suffer from extreme malnutrition and infections (typhoid, typhus or TB) or be exterminated if they were no longer able to work (Weinberg, 2009). In these individuals, preceding their illness and/or death, he observed a state of despair characterised by a sense of hopelessness, helplessness or meaninglessness (Frankl, as cited in Weinberg, 2009; Everson et al., 1996). He theorised that this meaninglessness or a “hopeless-helpless mind state” (Weinberg, 2009, p. 4) could somehow suppress immunity. Subsequent research in Psychoneuroimmunology (PNI) further elucidated the effect of so-called stressors on aspects of immunity. Kotchen (in Frankl, 1988) and Lukas (2000) both believe that meaning is health promoting and life prolonging. Lukas (2000) declares, “The emotional condition, however, and therewith the immune system as well, can be influenced through noetic means” (p. 178). Even under normal conditions, meaning orientation can and does influence our psychological and physical health.

Frankl also noticed that some of the surviving inmates did not merely stay alive, but attained the “highest peaks of humanity” (Shantall, 2003, p.48), demonstrated by comforting others and giving away their last pieces of food. Frankl’s view of unavoidable suffering in life is that it allows, in fact demands, each of us to exercise “the last of human freedoms” (Frankl, 1959, as cited in Shantall, 2003, p. 49) by changing ourselves when we can no longer change our fate. Frankl asserts that this is made possible because of a

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uniquely human dimension, the noological or spiritual dimension, which is accessed and expressed through a will to meaning. By exercising our will to meaning, thereby activating our spiritual potential, we can attain health and prevent disease, illness and sickness, and also influence how we recover from these.

It is important to clarify at the onset that the term spirituality is not used here in the religious sense (although it does not exclude it), but rather refers to a specific human dimension (Frankl, 1986) and includes freedom to make choices, the will to meaning, goal orientation, self-transcendence, responsibility, creativity, conscience, imagination, ideals and ideas (Graber, 2004). Religion aims at salvation while psychology aims at mental health (Frankl, 1988). Later sections will further explain the principles of Logotherapy in greater detail.

It is also vital to understand that Logotherapy adopts a particular view of the interplay between the physical, psychological and noetic, or so-called spiritual, dimensions. The basic concepts and assumptions of Logotherapy include the notion that the human being is an entity consisting of body, mind, and spirit (Lukas, 2000) and that the three dimensions form an inseparable unit (Graber, 2004). Graber further explains that the entire structure of Logotherapy rests on the premise that the human being, as a spiritual being, has to be treated as “an ontological entity-body, psyche and spirit” (Graber, 2004, p. 122).

This concurs with general systems theory (Engel, 1977). Systems theory posits that all levels of organisation are linked to each other in a hierarchical relationship. Change in one will therefore reflect and affect change in others. Engel (1977), in support of Von Bertalanffy (1963), believed that systems theory could provide a conceptual approach that



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would be aligned with Engel's biopsychosocial concept of disease. This concept would also be of value when studying disease and medical care as interrelated processes and, more specifically, the role of the physician and the role of the presenting individual, categorised as a patient or client.

Frankl as a neurologist and psychiatrist was all too aware of the interplay between these dimensions and at no time attempted to deny or ignore the physical and psychological dimensions. The fundamental principles of dimensional ontology, however, state that the noetic dimension is at the core and therefore influences both the psychological and physical dimensions. According to Frankl, it is the noetic dimension that is most neglected and the reason why the so-called mind body problem cannot be solved:

Of necessity the unity of man—a unity in spite of the multiplicity of the body and mind—cannot be found in the biological or psychological but must be sought in that noological dimension out of which man is projected in the first place. (Frankl, 1988, p. 25)

In this aspect, Logotherapy departs somewhat from systems theory and also Adlerian theory.

The concept of health as being inclusive of spirit is highlighted in many other philosophies of ancient (traditional cultures) health traditions, such as those of the Vedas (Khalsa & Tierra, 2008), Tibetan medicine (Forde, 2008) and certain African traditions. Contemporary non-western models of health do not exclude the possibility of a so-called 'unknown' dimension. The Greek term relating to health, *hygieia*, had more to do with hygiene, cleanliness and sanitation. Well-being on the other hand, has its roots in *eudaimon*, which is composed of two parts: *eu* means well and *daimon* means divinity or

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spirit (Kraut, 2010). According to Parry (2009), while eudaimonia rarely has connotations of happiness, as is often thought, it is more indicative of human thriving.

Another aspect of eudaimonic well-being is the concept of vitality (Ryan & Frederick, 1997; Ryan & Deci, 2001). This concept refers to having energy, being vital, a state of feeling alive and alert and, perhaps most importantly, “a feeling of energy from an internal source and not from specific threats in the environment” (Bostic, McGartland-Rubio & Hood, 2000, p. 313). Certain Greek philosophers believed eudaimonia (wellbeing of spirit), not excellence (*arête*) or health, is the highest human good, and were concerned with articulating how to achieve it (Brannon & Feist, 2009).

The 37<sup>th</sup> World Health Assembly (1995) adopted a resolution to include the spiritual dimension in health (Basu, as cited in Goel, Walia, Pathak, Sharma, Kalia, Swam, 2008). A special panel discussion was called in 2005 to further review “Spirituality, Religion and Health” (Goel et al., 2008). In his address to the sixty-first World Health Assembly, 26 May 2008, the Reverend Desmond Tutu, Archbishop Emeritus and Nobel Prize Laureate, said that “Perhaps it would be good for us to include ‘Spiritual well-being’? Perhaps one day this notion of (spiritual) well-being can be included in the WHO definition of health?” (para. 22).

The WHO Health Systems Research Institute (WHO, 2008) called for an exploration of this topic and published a paper *Spirituality and Health: An Initial Proposal to Incorporate Spiritual Health in Health Impact Assessments* (Chuengsatiansup, 2003). Chuengsatiansup (2003) proposed that the difficulty of including spirituality as a component of health for the most part is due to the conflicts between two underlying

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paradigms, the Newtonian and Cartesian paradigms, both of which are materialist and reductionist views of mainstream scientific thought. In these paradigms, the whole is understood by the properties of its parts. In other words, a complex whole (whether it is an ecological system or a living organism) is viewed as being reducible and can be explained only by objectively examining and measuring its components. Engel (1977) labelled the biomedical model as both science and dogma which, in no small way, was due to its dualistic nature, the separation of the body and the mind, as well as its materialistic and reductionist orientation (Borrell, Carrio, Suchman & Epstein, 2004).

Chuengsatiansup (2003) explains that spirituality, in juxtaposition, belongs to a very different paradigm and is based on entirely different ontological and epistemological assumptions, that “[s]pirituality is an emergent property of a complex living system and exists only when such a system is examined in a holistic manner” (2003, p. 3).

Von Bertalanffy (1963) refers to this as the “third realm” (p. 43) — aspects of human cognition, affect, and particularly behaviour, that stem from neither physical nor psychological disturbances, but rather from a disintegration of value systems, the meaninglessness of life and the collapse of purposes and goals, which he summarises as a “breakdown ... of spiritual orientation” (1963, p. 43). The example he uses is very evocative of Frankl’s view that the psychic and the spiritual aspects of man are indissolubly joined (Frankl, 1986).

Logotherapy is simultaneously an anthropological view of humans, a positive world perspective and a “science of healing” (Lukas, 2000, p. 7). In the widest sense, it is a method for the treatment of a person’s attitude toward his unchangeable fate. The function

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of Logotherapy is that of catalyst (Frankl, 1988) and the will to meaning is a pivotal starting point of this healing science. It stands to reason that the universality of Logotherapy and its non-reductionist view of humankind allows for the application in the following ways:

- To support the attainment of mental health care for refugees, migrants, the stateless, and displaced persons, especially during the reintegration phase.
- To sustain the health of caregivers, health care workers and health professionals in general.
- To augment current health practices, therapies and treatments (Frankl, 1986). In line with the biopsychosocial model as proposed by Engel (1977), it can also address the role of the medical professional and the role of individual responsibility.

Viktor Frankl's Logotherapy advocates the critical role of meaning and purpose and could play a central role in the exploration of the human spirit (noetic dimension) and the concept of spiritual health as part of overall health. Given that meaning is shown to improve mental and emotional health and that this, in turn, impacts directly on physical health, it follows that meaning (purpose) can therefore be directly correlated with physical health.

To explore this correlation between purpose and physical health, the notion of physical health will be based on the actions and function of the immune system as described by PNI as well as self reported vitality. In order to investigate this link, the researcher used secondary data from an existing instrument that was developed with the express objective of elucidating the link between all aspects of health and drew on its

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pragmatic application. The model and instrument was developed in the South African context and proposes that meaning and purpose are fundamental to wellness and performance.

This dissertation aims to examine the role of meaning, within the framework of Logotherapy, as a cornerstone of health. If meaning, as an essential component of the spiritual health, is a uniquely human dimension, as Frankl says, it follows that meaning should be included in the definition of health and that Logotherapy could be used to contribute to the health of all.

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**Chapter 2: Literature review**

Frankl coined the term Logotherapy in the 1920s (1988), while in the early 1930s he suggested an alternate term, 'Existenzanalyse' (1988, p. 5). *Existenzanalyse* refers to an assessment of individuals within their own paradigm and aims to assist that person to deal responsibly with their problems in the here and now (Graber, 2004). The essence of this term was lost in translation when, a decade later, his books were published in English, leading him to refrain from using the term existential analysis in all English publications. Although Logotherapy has been subsumed under the heading of existential analysis and is concerned with being (*ontos*), it is ultimately concerned with meaning (*logos*). Fabry suggested a literal translation of Logotherapy as healing through meaning (Fabry, as cited in Frankl, 1988).

**2.1. Basic assumptions of Logotherapy.**

The aim of this section is to discuss the constructs underpinning Logotherapy and the concomitant relationship to health and wellbeing. What does *meaning* mean and how it can be found is discussed first and includes the first set of basic assumptions, namely, Freedom of Will, the Will to Meaning and Meaning in Life. An explication of dimensional ontology follows, which will be used as a framework to examine models of health and disease as they relate to the physical, psychological and spiritual dimensions of human beings. Each dimension is discussed separately in this section.

## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

### 2.1.1. **Freedom of will, will to meaning and meaning in life**

The first, *Freedom of Human Will* exists in contrast to determinism and points not to a person's freedom from conditions, but rather freedom to take a stand on whatever conditions confront him or her (Frankl, 1988). It also means freedom to face, challenge or overcome his or her instincts, inherited disposition or environment.

Freedom, however, is only one side of the coin. On the other side and inseparable from freedom, is responsibility. This responsibility refers not only to our conscience, but also for our subsequent actions, choices and decisions. If we are privileged enough to live in conditions conducive to health, we are amongst the fortunate few. In these circumstances, we are free to choose our lifestyle and make whatever choices we want, but we are, nevertheless, responsible for those choices. In the event that conditions are not optimal for health, as individuals we still have the freedom to choose, adapt and take a stand to face that with which we are confronted, whatever that may be (Frankl, as cited in Lukas, 2000). Freedom is not something we possess (Frankl, 1986) and therefore can lose; freedom is what we are (ibid). Being human, therefore, means being conscious and being responsible.

The *Will to Meaning* is the second pillar of the meaning centred psychotherapy, Logotherapy. Frankl defines it as the basic striving of man to find and fulfil meaning and purpose that, he points out, is distinct to the Will to Power and the Will to Pleasure. The will to power refers to what Adler posited as the basic human motivation, and the will to pleasure, to Freud's theory of human motivation. It is a unique human ability and a powerful motivation. As Frankl purports, "It is a characteristic constituent of human

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existence that it transcends itself, that it reaches out for something other than itself” (as cited in Shantall, 2003, p. 37).

Empirical corroboration of the will to meaning is presented by Crumbaugh and Maholick (1964, as cited in Frankl 1986 and 1988); however, it is not a “drive” as they describe, but rather being existentially responsible (Frankl, 2000). It can therefore be referred to as a “strive” toward or pursuit of meaning, rather than a “drive”. The will to meaning is the primary motivation for living and when people do that which is uniquely theirs to do in life, they find contentment and happiness (Graber, 2004). It, therefore, has to be elicited and meaning itself has to be elucidated and acted on (Frankl, 1988; Frankl, 2000).

Most importantly, the will to meaning enhances immunity (Lukas, 2000), reduces stress (Schulenberg, 2004) and promotes health (Frankl, 1988). In each of these ways, it exerts a positive effect on the physical, psychological (including mental and emotional health) and overall health (Frankl, 1988; Lukas, 2000) of individuals. It can play a key role in the attainment and sustainment of health.

The third and final pillar, *Meaning in Life*, is defined by Reker and Wong (1998, as cited in Makola & Van den Berg, 2008) as “the cognisance of order and purpose in one’s existence, the pursuit and attainment of worthwhile goals, and accompanying sense of fulfilment” (p. 2). Meaning in life is objective (Frankl, as cited in Lukas, 2000) and constitutes a philosophical view of the world that states that life is unconditionally meaningful (Lukas, 2000). The individual, however, may not always be able to comprehend meaning consciously, in which case his / her will to meaning is thwarted,



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resulting in the inability to shape life in a meaningful way, psychological discomfort, existential frustration or neuroses, questioning the purpose of their existence and even physical illness (Frankl, as cited in Lukas, 2000; Schulenberg, 2004).

### 2.1.2. The meaning of “meaning”

Mascaro and Rosen (2008) summarise various definitions of the construct meaning as the “possession of a coherent framework for viewing life that provides a sense of purpose or direction, which, if lived with in accord, can bring about a sense of fulfilment” (Mascaro & Rosen, 2008, p. 579). Concepts such as existential fulfilment, existential well-being, purpose in life, psychological well-being and spiritual well-being are closely related to the construct, meaning in life (Tomic & Tomic, 2008). Consequently, loss of meaning would imply a total loss of significance in life in general or in work and people specifically.

Research conclusively indicates that meaning improves psychological health (Zika & Chamberlain, 1992, as cited in Everson et al., 1996). It alleviates distress (Everson, et al., 1996); lessens suffering (Kang, et al., 2009); increases self esteem (Debats, 1996, as cited in Melton & Schulenberg, 2008); decreases neuroticism, anxiety and depression (Sappington et al., 1990; Phillips, 1980, as cited in Melton & Schulenberg, 2008); enhances coping and adjustment after bereavement (Robak & Griffin, 2000 and Baumeister & Vohs, 2002, as cited in Melton & Schulenberg, 2008); reduces burnout (Pines, 2004, as cited in Tomic & Tomic, 2008) and generally improves mental stability (Hutzell, 1986). It is even suggested that some meaning instruments can prospectively predict levels of depression and hope (Mascano & Rosen, 2005, as cited in Mascano & Rosen, 2008) as well as

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happiness and general psychological distress (Debats, 1996, as cited in Mascano & Rosen, 2008).

Research examining the role of hopelessness, an antithesis to meaning and purposefulness, confirmed that it is a strong predictor of adverse health conditions and is associated with disease progression and earlier death of cancer patients (Everson et al., 1996). Hopelessness is defined as negative expectancies about oneself and the future (Everson et al., 1996). They point out that depression and hopelessness are not the same constructs and that empirical evidence implies that hopelessness may function independently from depression. The results of their research reveal that hopelessness, independent of traditional risk factors and depression, predicted incidence of myocardial infarction and were associated with incident cancer (ibid).

Other studies report that forty percent of cancer patients wanted help with finding a sense of meaning in their lives (Greenstein & Breitbart, 2000). Kang, Kim, H., Kim, S., Song & Sim (2009) found that Logotherapy demonstrated the potential to improve the quality of life and prevent an existential vacuum in a palliative care setting. In addition to affecting psychological well-being positively, meaning may be physiologically protective and exert a positive effect on the course of disease (Bower et al., 1998; Taylor et al., 2000, as cited in Fjelland, Barron & Foxall, 2007).

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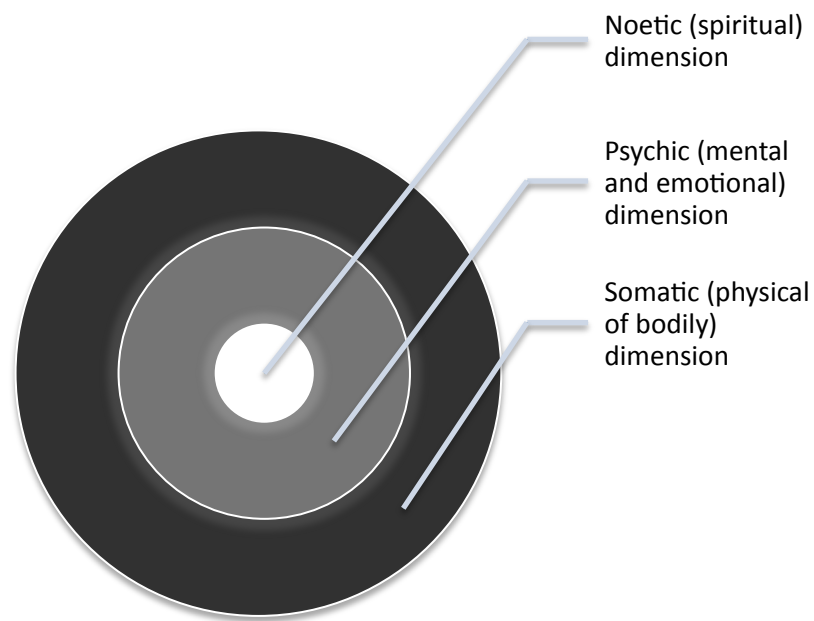
### 2.1.3. **How is meaning found: creative, experiential and attitudinal values**

Shantall (2003) says “meaning is discerned by our conscience as the one thing that is required of us in every unique situation of our personal lives” (p. 30). Frankl suggests three ways in which meaning can be discovered. Firstly, through the achievement of a task which he terms *creative values*. Life itself is a task (Frankl, 1986); however, the term can also refer to creating a work, performing a deed, and how we approach our work or daily tasks. Secondly, by realising *experiential values*, that is by experiencing what is “good”, “true” and “beautiful”, or by loving another person. Examples of this include the experience of nature, culture or art. Finally, meaning can be realised through the attitude with which we face suffering or *attitudinal values*. The latter can only take place when suffering is unavoidable and inescapable.

### 2.1.4. **Dimensional ontology**

Human beings are viewed as comprising three dimensions (Frankl, 1988). These dimensions penetrate one another completely and at every point, all three dimensions merge. We exist in these dimensions simultaneously and none of these can be neglected. They comprised the somatic, the psychic and the noetic as illustrated below.

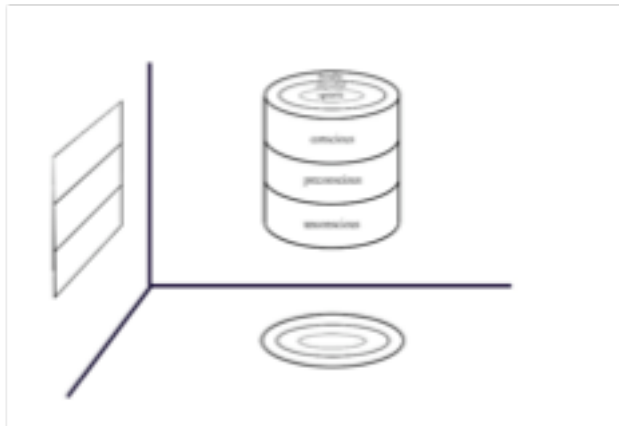
## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH



*Figure 1.* The three dimensions depicted as layers of concentric circles (Graber, 2004, p. 75).

Dimensional ontology is based on two laws: (a) the same phenomenon or object viewed from its own dimension to a different but lower dimension is contradictory when depicted in the lower dimension. The example used by Frankl to illustrate this is that of a cylindrical cup viewed from its three dimensional-space projected onto a two dimensional plane. Imagine a light projected on the object from the side and then from above. The one view will produce that of a square while another view will produce a circle (Frankl, 1988).

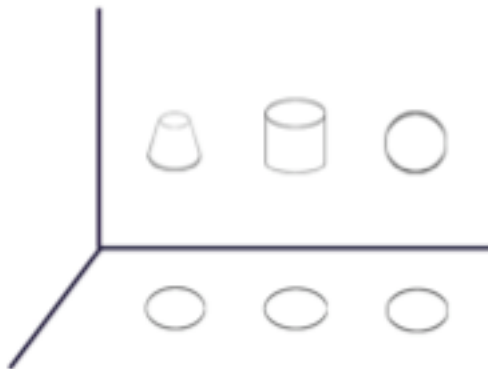
## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH



*Figure 1.* First law of Dimensional Ontology (Frankl, 1988, p. 23; Graber, 2004, p. 75; Lewis, 2011, p. 9).

(b) Different phenomena or objects viewed from their dimension to a lower dimension produce ambiguous depictions. In his example, a light is projected from above onto a cylinder, cone and sphere. These different geometrical shapes will all cast the same shadow (a circle), and it would be impossible to distinguish one from the other by only looking at the shadows they cast (Frankl, 1988).

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*Figure 2.* Second law of Dimensional Ontology (Frankl, 1988, p. 24; Lewis, 2011, p. 10).

Ann Graber (2004) developed a Logotherapy based Model of Wholeness taking these laws into account. This model has much in common with the complexity theory and open systems. A complex system is one in which numerous independent elements continuously interact (Williams, as cited in Valle, 2000) and that has a tendency to self organise (Borrel-Carrio, Suchman & Epstein, 2004). Components of a complex system cannot be divided and studied in isolation and the behaviour of self-organising complex systems cannot be predicted. A characteristic of an open system is that it not only responds to stimuli, but also exhibits autonomous activity (von Bertalanffy, 1963).

The model is an attempt to graphically portray the integration of the strata model and the layer model of concentric circles into a three dimensional model. The strata model represents the unconscious, preconscious and the conscious in a hierarchy, with the unconscious at the bottom, the preconscious in the centre and the conscious at the top. It is then overlapped with the circular layer model that has the noetic dimension at its centre, encompassed by the peripheral layers of the psyche and subsequently, the somatic.

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Figure 3. Frankl's Dimensional Ontology (Lewis, 2011, p. 2).

These dimensions penetrate one another completely and at every point, where all three dimensions merge. We exist simultaneously in these dimensions and none of these can be neglected. Integration in this context would be indicated by the integration of the somatic, psychic and noetic (spiritual) dimensions.

A Human being resembles a machine on a physical level and an animal on a psychological level. Both are closed systems, since in neither is there any indication whatsoever of Freedom of Will. Such images of the human being... represent incomplete and therefore distorted images of the human person as a whole. If, however, we maintain that as human beings we do have a body and a psyche, but we are neither just the one or the other or even a combination of both, but essentially something more than merely body and psyche ... [w]e also have spiritual capacities. (Frankl, 1969, p. 33)

Frankl makes it very clear that people are not defined by their physical dimension (body), their psychological dimension (our mind) or even a combination of both

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(mindbody), but fundamentally by their spiritual dimension.

### **2.1.1.1. *The physical dimension.***

The somatic dimension or physical plane relates to the body, all physical phenomena, cell actions, chemical and physical processes and biological-physiological functions of the body. Logotherapy can also be applied to somatogenic diseases in general (Frankl, 1988).

#### Bio-medical model: a model for the physical dimension

The bio-medical model emphasises the role of medicine in the elimination of disease using a scientific mode of thinking underpinned by the following assumptions: Diseases do not have psychological causes; individuals are not responsible for becoming ill because disease is caused by specific aetiologies or disease-causing organisms and the patient is a passive recipient of treatment that focuses on the body. Disease is considered as being in the domain of the body and in this paradigm has no link to the brain or any mental or emotional (psychological) processes (Broom, 2007; Freund & McGuire, 1991; Illich, 1976; Morris, 1998). This dualistic approach is focused on the reduction and so-called elimination of disease, illness and sickness and is most often achieved by means of diagnoses and treatment.

There are many limitations embedded in this model; however, the researcher would like to point out three of these that are relevant to this research. The first is found in the differentiation between disease, illness and sickness. Gilbert, Selikow & Walker (1996) agree that disease is a physical concept mainly linked to the body (biological impairment of the internal functioning of the body in objective conditions). In contrast, they define illness



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as a psychological concept linked to the individual (a subjective phenomenon in which the individuals perceive themselves as not being well), and sickness, as a social condition that is applied to people who are deemed by others to be diseased or ill.

Kleinman (1988, as cited in Whitsitt, 2010) and Frank (1991, as cited in Whitsitt, 2010) distinguish between disease, as the objective classification of a medical disorder, and illness as a lived experience of the patient. According to Moss (2003), illness dramatically changes a person's experience of the world. Kleinman (as cited in Whitsitt, 2009) further distinguishes illness and disease from sickness, which he views as the manifestation of disorder across populations.

Morris (1998) resists distinguishing between subjective (illness) and objective realities (disease), referring to this separation as a leftover of Cartesian dualism. He believes that disease is biocultural, influencing both the meaning of illness and how it is encountered. He further elucidates the changed and constantly changing experience of human affliction. Frankl (1991, as cited in Whitsitt) agrees with this split between the modern and postmodern notions of illness and, according to him, its treatment: "They (the patient) realize that they are neither sick nor well, but members of the 'remission society' who appreciate that health and sickness form a unified whole rather than mutually exclusive parts" (Whitsitt, 2010, p. 111).

In the second instance, approaching disease as either a complicated or complex problem has not made the attainment of health any more clear-cut or simpler to achieve. Westley, Zimmerman and Quinn Patton (2006) draw a distinction between *simple*, *complicated* and *complex* problems. The biomedical approach makes sense when

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addressing the distinction between *simple* and *complicated* problems, but not *complex* problems. An example of a *simple* problem is baking a cake. *Simple* problems have set protocols that can be tested and easily replicated (a recipe), experience increases the success rate, best practice yields good results every time and the quantity, nature and order in which to combine the procedures, are specified.

There are *complicated* problems like sending a rocket to the moon. *Complicated* problems, which use rigid formulae or protocols, require high levels of expertise and training and success depends on a blueprint that directs the procedures and specifies the exact relationship or sequence in which to proceed.

Westley, Zimmerman and Quinn Patton (ibid) finally explain *complex* problems, such as raising a child. Rigid protocols have limited application in complex problems, one success does not guarantee another, expertise helps only when balanced with responsiveness of the individual, each problem is as individual as the person or situation presenting, uncertainty of the outcome remains, and, most importantly, one cannot separate the parts from the whole.

Parallel medical examples of *simple*, *complicated* and *complex* problems might be setting a broken limb, performing surgery and healing certain diseases like cancer, respectively. A biomedical approach in each of these examples meets with varying degrees of success, as explained below.

Tending a broken limb requires set protocols (a 'recipe'), it can be taught and replicated, best results are achieved by following the set procedures and best practice gives

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good results every time. The more limbs a person sets, the better he/she becomes at it and he/she does not necessarily have to be a medically trained health professional to do so.

A *complicated* problem, for example an appendectomy, requires rigid protocols, very high levels of expertise and professional training. Success is not a certainty and depends on a “blueprint” that directs the procedures and specifies the exact sequence in which to proceed.

When treating *complex* problems like cancer, despite using various combinations of rigid protocol and relying on high levels of expertise to do so, each cancer is as individual as the presenting individual. One success at cancer treatment does not guarantee another. Uncertainty of the outcome characterises the process and expertise helps only when balanced with the responsiveness of the individual. For example, Saporito (2008) asks of cycling champion and terminal cancer survivor, Lance Armstrong: “He has won his battle with cancer. So why are millions of others still losing theirs?”(p. 40).

This not only illustrates the complex nature of disease, illness and sickness, but also makes the point that the promotion and attainment of health is a complex problem in and of itself. These challenges, amongst others, call for a broader perspective on health and disease and bring the biomedical model into question.

Finally, this dissertation agrees with Illich (1976) that society has transferred exclusive rights to health professionals to determine what constitutes sickness, who is and has become sick and the extent and limitations of what can be done for such persons. This is in and of itself not a problem; however, Broom (2007) cautions that medical professionals have become “biotechnologists ... working from physico-materialist

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assumptions” (p. 19). In doing so, value is placed only on technical ability and disease is attributed to infections, biochemistry, toxicity, mutations, genetic misfortune, lifestyle choices and, more recently, the vagaries of so-called stress.

Illich (1976) concurs and adds that a vast amount of contemporary clinical care is “incidental” (p. 14) in the curing of disease and claims that disease is itself “the result of medical intervention in favour of people who are or might get sick. It is ... iatrogenic” (Illich, 1976, p. 14). Frankl also warns against iatrogenic damage. For iatrogenic damage to occur the client is persuaded to surrender his / her noetic freedom and responsibility and instead, give in and give up to their unconscious conflicts and complexes. In other words, a client seeks psychotherapeutic treatment, but instead finds a possibility to shift his/her responsibility away from himself or herself onto something or someone else during the process of therapy. In Logotherapy, one of the basic rules is to offer help, but not to take away accountability.

The role of the doctor, the patient and the disease in the biomedical model is in direct contrast to that presented by Engel (1977) and Frankl (1986). The biopsychosocial model suggests that the task of the health care professional is to “establish the nature of the problem and to decide whether or not it is best handled in a medical framework” (Engel, 1977, p. 133). Some individuals experience illness conditions that others regard as ‘problems of living’, expressed as emotional reactions or somatic symptoms. When approaching the health care professional, the individual must distinguish between what is responsible for their distress and if he/she will accept the “sick role” (Engel, 1977, p. 133) and enter into the health care system.

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Logotherapy is ultimately an education toward the responsibility of each person in these interactions and is, at the same time, unreservedly non-reductionist. It is rooted in the conviction that human beings want to shape their lives in a meaningful way, and that they can become physically ill when the will to meaning becomes frustrated (Lukas, 2000).

### ***2.1.1.2. The psychological dimension***

The psychic dimension or plane of awareness (Lukas, 2000; Graber, 2004) includes cognition, intellect, acquired behaviours, social impressions, emotional states, moods, instincts, desires, passions (ibid).

Bridging the physical and the psychological dimension: Psychosomatic Medicine and Mindbody medicine

The awareness of the link between health and illness, between psychological and social factors and between physical and sociopsychological factors (Freund & McGuire, 1998) spearheaded the development of so-called *mindbody medicine*.<sup>2</sup> Although Moss (2003) claims that mindbody medicine is a “revolutionary 21<sup>st</sup>-century approach” (p. 3) to health care, the concept of mind and its importance in the treatment of illness dates back to Ayurvedic and Chinese medicine (National Institutes of Health [NIH]). In western history,

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<sup>2</sup> It may be misleading to talk of mind-body as the term suggests separation of two things and not an integrated concept (Evans as cited in Sarno, 2006). The researcher agrees with this statement and in an attempt not to perpetuate the suggested dualism, the term mind body will be used unhyphenated in the remainder of the document.

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Hippocrates believed that treatment could occur only when considering attitude, environment and medicine. He also recognised the moral and spiritual aspects of healing. Mindbody medicine could be said to have its roots in psychosomatic medicine and that “psychosomatic” is the mindbody problem expressed in medical terms (Von Bertalanffy, 1963).

Psychosomatic illness has a long and complex history (Brown, 2000; Sarno, 2006) and is not without its crises (Friedman, as cited in Brown, 2000). As recently as 2006, Sarno claimed that Psychosomatic Medicine is a “ghost, a set of ideas without a body” (Sarno, 2006, p. 45). Figures in the history of psychosomatosis include Martin Charcot, Josef Breuer, Sigmund Freud, Alfred Adler, Franz Alexander and Allan Walters (Sarno, 2006) and appeared in medical textbooks in the late seventeenth and early eighteenth centuries, and in treatises on mind and body by leading medical figures of the mid-eighteenth century, Jerome Gaub and Robert Whytt. In the mid 18<sup>th</sup> century Jerome Gaub stated that “The reason why a sound body becomes ill or an ailing body recovers, very often lies in the mind” (Brannon & Feist, 2009, p. 12).

The launch edition of *Psychosomatic Medicine* (1939) classified psychosomatic medicine as both a special field and a method of approach essential to every medical speciality because of its fundamental importance in diagnosis and treatment. Contemporary psychosomatic medicine is an interdisciplinary medical field studying the relationships of social, psychological, and behavioural factors on bodily processes and well-being in humans and is considered a subspecialty of the fields of psychiatry and neurology. Medical treatments and psychotherapy are used to treat psychosomatic disorders.

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Sarno (2006) goes to great lengths to distinguish somatoform disorders in which mental factors are the sole cause of a physical illness, from psychosomatic disorders, disorders in which mental factors play a significant role in the development, expression, or resolution of a physical illness. Moss (2003) distinguishes between somatisation disorder<sup>4</sup>, undifferentiated complaints, psychophysiological disorders, posttraumatic conditions, chronic conditions and somatic symptoms of psychiatric disorders. A somatisation disorder involves the translation of emotional distress into physical symptoms, where no organic bases have been identified for the complaints. Undifferentiated complaints are vague symptoms that have not yet developed clear physical or medical illnesses. Complaints of this nature (fatigue, dizziness, insomnia, abdominal pain, chest pain, numbness, cough, weight loss, constipation, back pain, oedema and headaches) lie in the “twilight zone between body and mind” (Balint, as cited in Moss, 2003, p. 5) and only 10-15 percent exhibited a clear organic diagnosis after one year (Balint, as cited in Moss, 2003).

Psychophysiological disorders involve measurable modification in physiology either worsening with situational or cognitive distress or producing new somatic symptoms (Sternbach, as cited in Moss, 2003). Posttraumatic conditions refer to an increase in general somatic symptoms after traumatic experiences and losses. It can also refer to an increased incidence in somatisation symptoms. Patients with psychiatric disorders like depressive and anxiety disorders often present with somatic symptoms and, according to

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<sup>4</sup> Sarno’s term for the same is somatoform disorders.

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Danton, Altrocchi, Antonuccio & Basta (as cited in Moss, 2003), up to 65% of such patients seek treatment from primary care physicians.

For example, feelings of anxiety and fear may be characterised by the following physical sensations: pounding heart, stomach pains, muscle tension, fatigue, headaches, muscle tension, muscle aches, difficulty swallowing, trembling, twitching, irritability, sweating, hot flashes, lightheadedness or breathlessness, nausea or gastrointestinal discomfort and being easily startled. The ability to concentrate or to fall or stay asleep can also be affected (The Brain and Behaviour Research Foundation (NARSAD, n.d.). In fact, recent research is finding growing evidence that negative emotions, including depression, anxiety, and anger can have substantial detrimental effects on the immune system, which in turn can increase risks associated with infectious disease, cancer, wound healing, autoimmune disease, HIV progression, type 2 diabetes, and even Alzheimer's disease (Alexander & Benjamin, 2011).

Making these distinctions, as pragmatic as they are, may lead health professionals into the same dualistic trap created by the biomedical model. As Frankl declares: "Any physician who has ever tried to elucidate the multidimensional etiology of a psychosomatic condition knows very well how difficult it is to differentiate between psychogenic and somatogenic components" (2000, p. 33).

Mindbody medicine, in contrast to psychosomatic medicine, is an approach that employs a variety of techniques to enhance the mind's capacity to affect bodily function and symptoms (Kemp & Rasbridge, 2004) by integrating modern scientific medicine, psychology, nutrition and exercise physiology. Mind body medicines include behavioural



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and psychosocial interventions among the first line of interventions and the patient plays an active role from the start of the treatment plan while education and self-management are integral.

Definitions of health in this mindbody approach fall into two broad categories: those who portray health as an ideal state and those who portray health as movement in a positive direction (Stone, as cited in Brannon & Feist, 2009). The first category is binary, while the second category considers health to be (a) situated on a continuum and (b) multidimensional, that is, inclusive of biological, psychological, social and even spiritual aspects (Brannon & Feist, 2009; National Centre Complimentary and Alternative Medicine (NCCAM), 2010).

An example of the former is salutogenesis, which is a theory of the origin of health that emphasises a move towards a study of factors that enables individuals to live psychologically healthy lives despite the omnipresence of stress. Antonovsky (Eriksson & Lindström, 2007) crafted the term in a move away from the pathogenic paradigm. He views disease and wellness as existing on a continuum, with individuals falling somewhere between the extremes of complete health (wellness) and death (disease). It is a resource-orientated concept which alludes to possible answers as to why, despite stressful situations and hardships, people stay well (ibid).

The World Health Organisation (1948) portrays health not by the absence of disease, but rather as a positive state, which is deemed encouraging by health psychologist advocates Brannon and Feist (2009), because it supports a more holistic model of health as portrayed by the *biopsychosocial model*. This model views disease as a result of the

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interaction of biological, psychological and social conditions and emphasises positive health.

The focus of the biopsychosocial model, also alternatively known as a psycho-socio-environmental model, is the promotion and maintenance of health through behavioural and socio-environmental changes. Individuals are viewed within their environment and as part of a family and social context in which cultural influences play a role in shaping activities dealing with health, illness and even death. People, in this paradigm, are not viewed as passive victims of disease, but are able to participate in recovery and promote good health.

The biopsychosocial model also considers that people may attach meaning to illness and health. Immunologist, Brian Broom (2007), presents clinical cases regarding the nature of such meaning, the relationship of meaning to the body and the manner in which meaning expresses itself in health, or lack of it, in his book “Meaning-full Disease” (Broom, 2007). He coins the phrase “somatic metaphor” (2007, p. 27) to illustrate the intimacy between the body and our ability to symbolise, and points out that there are many “meaning-full diseases” (2000, p. 30) that are an indication of this capacity to symbolise in a bodily form. Sarno (2006) works from a similar stance.

Lipowski (as cited in Fjelland, Barron & Foxal, 2007) agrees that meaning influences the person’s emotional and motivational response to illness and that an individual’s personal “meaning of illness” (2007, p. 394) was directly related to their strategy of coping. Finding meaning in life experiences affects psychological well-being, is physiologically protective and could affect the course of a disease (Bower, Kemeny, Taylor & Fahey, 1998; Taylor, 2000, as cited in Fjelland, Barron & Foxal, 2007).

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An interesting and related model is the *ethnomedical model* developed by Ahmed and Fraser (Alladin, 1993). This approach adopts a social perspective rather than a biomedical frame (Fabrega, as cited in Alladin, 1993) and has been used in transcultural counselling. Results of an exploratory test of the model by Alladin and Ullah (Alladin, 1993) confirmed that sickness conception is most relevant to the presenting client and that they only accepted health-care suggestions by the practitioner if these matched their own conceptualisations (Alladin, 1993; Kleinman, as cited in Alladin, 1993). Other results indicated that wellbeing criteria (biological, psychological and environmental factors are weighted differently in the causal links with disease and well-being) and the recognition of a health need are of prime importance to the presenting person. The ethnomedical model, therefore, highlights the components that support an individual's conception of disease in any culture (Alladin, 1993).

Perhaps the most distinguishing factor is that the mindbody medicine approach is aimed at understanding the patient as a totality of body, mind *and* spirit (NCCAM). It looks at the interactions among the brain, body and behaviour and the powerful ways in which emotional, social, spiritual and behavioural factors can directly affect health. Mindbody medicine focuses on strategies that are thought to promote health and views illness as an opportunity for growth and transformation.

In addition to existential and humanistic psychology, two recent fields in psychology have also actively attempted to follow this model. Positive psychology and its underlying principles of sustained inner strength, growth, adaptation and overall wellbeing, has its origins in the work of Jung, Terman, Watson, Maslow, Assagioli and Frankl (Strumpfer,

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2005, as cited in Makola & van den Berg, 2010). Health psychology is an interdisciplinary field of study that not only focuses on aspects of health, but also draws from behavioural medicine, medical anthropology, medical psychology, behavioural health, psychopharmacology, neuropsychology and psychopathology (Ross & Deverell, 2005). Feldman Barrett (2009) believes that mind-brain and behaviour-brain correspondence are crucial issues in psychology and its principal challenge in the 21<sup>st</sup> century.

### ***2.1.1.3. The spiritual dimension***

Spirituality is a term most often used in reference to the nonmaterial aspect of self (Faull, 2006) and emphasises the subjectivity of human perceptions. It enables individuals to resolve contradictions through relationships and connections so that they perceive themselves to be a meaningful and integral part of a greater whole (ibid). In a review of 258 research articles on spirituality, Cook (2003) identifies 13 recurring themes: relational, transcendent, human, meaning and purpose in life, authenticity and truth, values, non-material, non-religious, wholeness, self-knowledge, creativity, core/force/soul and consciousness.

In Logotherapy, the will to meaning points to the noetic dimension that is a primary human experience (Lukas, 2000) and a specifically human dimension (Graber, 2004). The noetic dimension contains freedom of choice, intentionality or decision of the will, conscience (ethical and religious sensitivity), inspiration, the capacity to be awed, artistic and creative interests and the understanding of values and love (ibid). This dimension

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contains the core of our humanity and although sickness can originate from here, the core itself cannot ever become sick (Farby, as cited in Graber, 2004).

Research studies regarding spirituality relate to interesting basic and applied research about forgiveness, mental health and physical health (Root & McCullough, as cited in L'Abate, 2007). Many studies report that spirituality is positively related to adaptability (King, 2007), health, hope and optimism, and is negatively related to depression, anxiety, psychotic symptoms and substance abuse (Goel, et al., 2008). Furthermore, spiritual well-being was significantly related to quality of life in cancer patients, individuals suffering from spinal cord injuries, HIV/AIDS, high blood pressure and fibromyalgia (King, 2007). Similar relations were observed between spiritual and mental health.

According to King (2007), spiritual intelligence serves as a moderator in many of these correlations. Spiritual intelligence (SQ) is the intelligence with which we attend to and solve problems of meaning and value, the manner in which we place our actions and lives in a wider, richer, meaning-giving context and how we evaluate and discriminate between choices of actions and life-paths (Zohar & Marshall, 2000). According to Zohar and Marshall (2000), several prominent scientists have provided scientific evidence for SQ in recent neurological, psychological and anthropological studies on human intelligence, human thinking and linguistics.

It is not in the scope of this dissertation to examine such research, which relies on its outcome to further substantiate the vital importance of meaning as a spiritual component in the definition of health.

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### 2.2. **The Interdisciplinary Bridge: Psychoneuroimmunology**

In the last fifty years, mindbody interactions have become the subject of rigorous scientific enquiry. There have been major advances in our understanding of mental processes, the endocrine and immune systems, as well as the methodologies used to investigate these phenomena. Von Bertalanffy (1963) may have been quite right when he said that in order to make some progress relevant to psychological theory (and psychiatric practice), we have to apply “whatever fields of science—such as biology, psychology, psychiatry, cultural anthropology and comparative linguistics—can provide” (p. 31). PNI has emerged as such a multidisciplinary and interdisciplinary field of research that provides an understanding of some fundamental mechanisms involved in the biopsychosocial model (Lutgendorf & Constanzo, 2003). It investigates the relationships between psychological processes, behaviour, psychosocial factors, the nervous, endocrine, immune systems, and disease, while also focusing on the manner in which each system affects the others, enhancing and/or inhibiting processes elsewhere in the body.

George F. Solomon, in his landmark article, “Emotions, Immunity, and Disease: A Speculative Theoretical Integration” (Solomon & Moos, 1964, as cited in Kiecolt-Glaser, McGuire, Robles and Glaser, 2002), coined the term *psychoimmunology*. Psychiatrist and neurologist, Viktor Frankl, made acute observations in his book *Man's Search for Meaning* (Frankl, 1969) about his own and other inmate's chances of survival in the inhumane and harsh conditions of Nazi concentration camps. His theory that meaninglessness could lead to actual health changes, which he surmised was due, at least in part, to suppressed immunity, was subsequently proven by Robert Ader in 1975 through his conditioning

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experiments on rats using cyclophosphamide and saccharine (Ader, 1988). Ader is acknowledged widely as the originator of the term *Psychoneuroimmunology*.

Early animal studies associated stress with increased susceptibility to infectious and inflammatory disease. This led to speculation that changes in immunity might be the mechanism linking stress and morbidity in humans (Irwin, 2008). The links between brain, behaviour and the immune system have been thoroughly researched since the 1980s.

Natural Killer (NK) cell activity, central corticotrophin releasing hormones (CRH), hypothalamic pituitary adrenal (HPA) mechanisms, sympathetic neurotransmitters and cytokines are the key components of the immune system involved in a variety of studies linking them to chronic stress, cancer, depression, actual and anticipatory bereavement, poor sleep, wound healing, autoimmune disease and cardiac events (Irwin, 2008).

Numerous other researchers examined the impact of social defeat, restraint, crowding, handling, sleep deprivation and bereavement (Maier, Watkins & Fleshner; 1994) on immune responses. Although emotions and thoughts impact on immunity, other psychological variables like personality, coping processes, loneliness and attachment further modulate the immune consequences of “stressors”. Most importantly, research has demonstrated that communication between the brain and the immune system flows bi-directionally, that is, from the brain to the immune system and also from the immune system to the brain (Irwin, 2008). Hormones, neuropeptides and cytokines facilitate this bi-directional communication between the nervous, endocrine and immune systems.

Weinberg (2009) explains that central to this process is the interaction between neurotransmitters and neuropeptides. Neurotransmitters are chemical messengers produced

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by the brain and include serotonin, dopamine and adrenalin while neuropeptides relevant to this process include Interleukin 1 (IL-1), Interleukin 6 (IL-6) and Tumour Necrosing Factor  $\alpha$  (TNF), also known as pro-inflammatory cytokines. A negative state of mind, whether exogenous or endogenous, changes the relative concentration of neurotransmitters, triggering the brain to increase the production of corticotropin-releasing hormone (CRH)<sup>5</sup> and macrophage production by the immune system.

CRH is a key central neuropeptide involved in integrating behavioural, neural, neuroendocrine and immune responses to stress. Neuropeptides and their receptors are found in the body as well as the brain. CRH increases the production of cortisone, which in turn reduces NK cell activity and thereby the effectiveness of the immune system. This contributes to insulin resistance and osteoporosis, but more insidiously, crosses back over the body-brain barrier resulting in a negative effect on the hippocampus. The limbic system, which is traditionally regarded as a system of functionally related neural structures in the brain that are involved in emotional behaviour, also contains a large concentration of neurotransmitters and concomitant receptors. The implication is that at a molecular level, the brain is in the body and the body is in fact “a mobile brain” (Pert, 1997, p. 188).

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<sup>5</sup> Weinberg refers to corticotropin-releasing factor (CRF) as seen in Figure 6.



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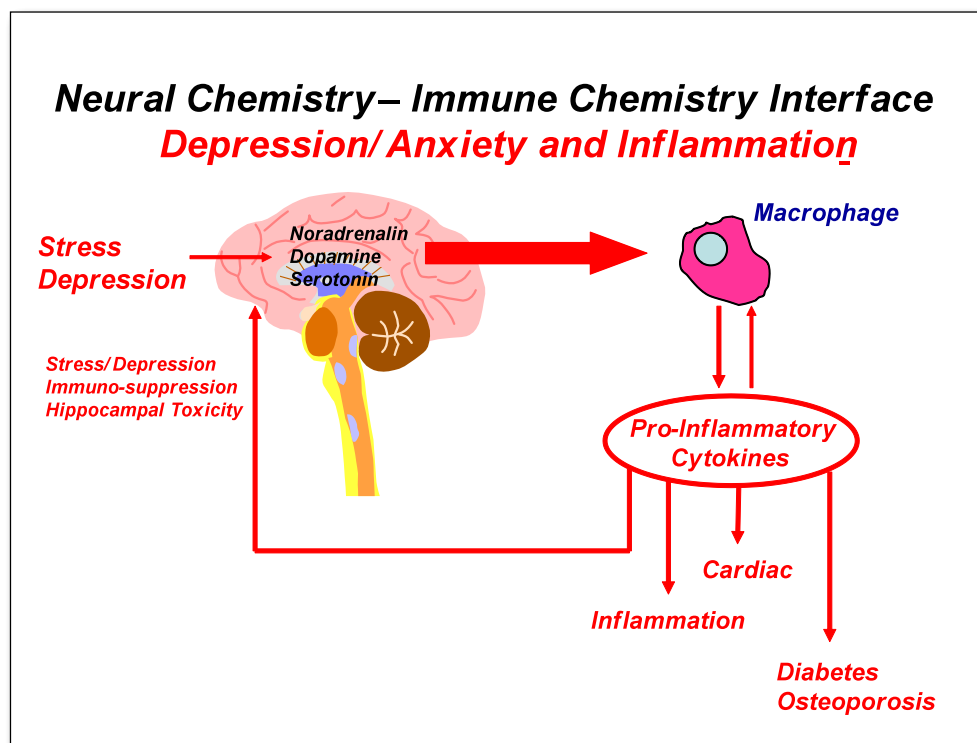


Figure 4. Neural chemistry-immune chemistry interface: depression/anxiety and inflammation (Weinberg, 2009, p. 18).

Increased macrophage production leads to an increase in pro-inflammatory cytokines (PIC) that exerts extensive negative effects on the body and the brain. Typically, this would include joint and bowel inflammation, disruption of hippocampal function and neurotransmitter activity, expression of a predisposition to the development of Type 2 Diabetes, suppression of cardiac contractility, contribution to the development of osteoporosis, arthritis, immune suppression and sickness behaviour (Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002). Alteration in cytokine abnormalities have been found in patients with cancer and are known to contribute to disordered sleep, insomnia and fatigue in depressive disorders (Irwin, 2008). It has been suggested that persistent

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unexplained insomnia and fatigue could stem from an underlying long-term alteration in inflammatory biology (ibid).

There is also mounting evidence of the harmful effects that negative emotions like anger, anxiety and depression can have on the immune system with ensuing risks associated with infectious disease, cancer, wound healing, autoimmune disease, HIV progression, type 2 diabetes, and even Alzheimer's disease (Alexander & Benjamin, 2011; Perini, Muller & Buhler, 1991; Smith, 2003).

A recent example of this was published by Suarez, Lewis and Kuhn and noted in the American Psychology Association monitor (2003). The paper is the first to document a relationship of aggression and hostility to one of the inflammatory markers (specifically TNF levels) that characterise atherosclerosis. "Overall, these results suggest that it is the attitude of ill-will toward others in addition to the tendency toward physical harm and verbal aggression that underlies the positive association between aggression and [TNF levels]" (Smith, 2003, p. 47)

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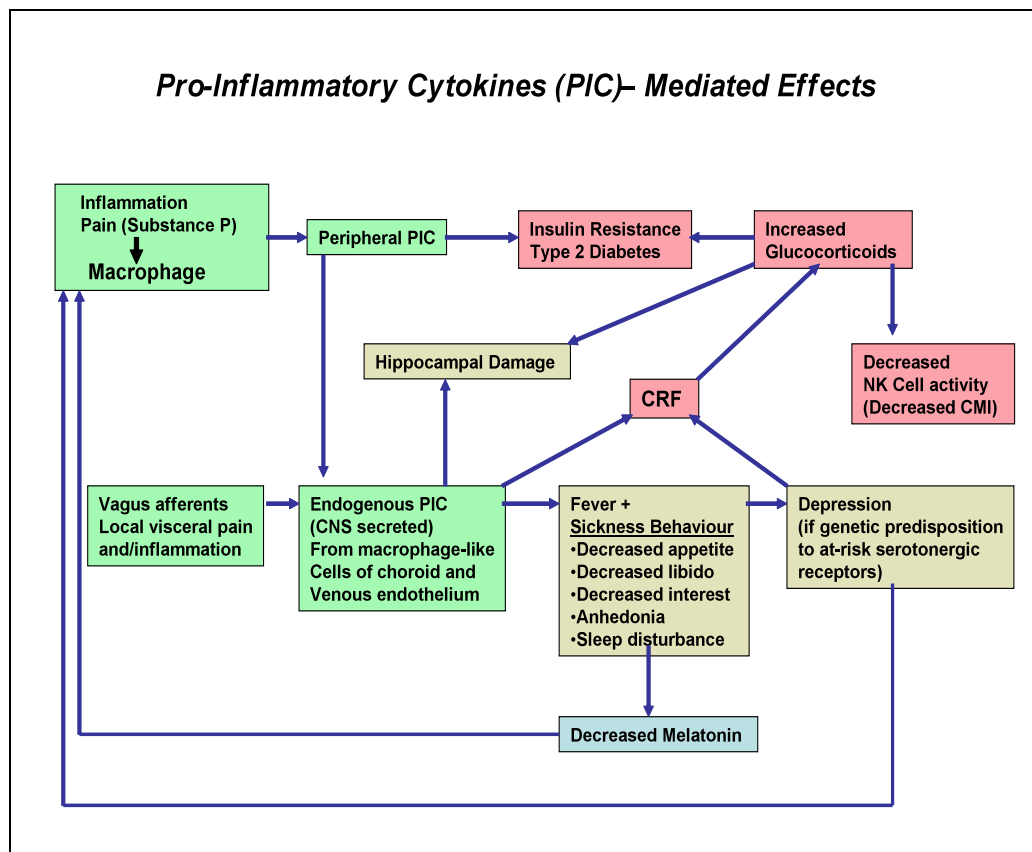


Figure 5. Pro-inflammatory cytokines (PIC)- mediated effects (Weinberg, 2009, p. 19).

It is obvious that a well functioning immune system is of vital importance to good health. Research on PNI illustrates the interplay between psychological functioning and health and has made it possible to explore the links between mental health and physical health. Despite the current mindbody approach accepting the influence of the brain and nervous system on the immune, endocrine and autonomic functions, its techniques are aimed mainly at stress reduction by means of stress management, coping skills training, cognitive behavioural intervention and relaxation therapy.

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Psychological stress serves as an excellent clinical model to learn more about the interactions between the brain and the immune system but it does not, according to the researcher, address the heart of the problem just as dissecting a rat does not teach one all one might need to know about rats. Segerstrom and Miller (2004) suggest that investigations should “go beyond the relationship between stressful events and immune parameters to investigate the psychological phenomena that mediate that relationship” (Segerstrom & Miller, 2004, P. 20).

The impact of meaning on physical health is well documented, thus supporting the aim of this paper, which, as mentioned previously, is to explore the relationship between purpose, as an expression of meaning, with health, vitality and well-being.

### 2.3. **Measuring meaning**

Fjelland, Barron and Foxall (2007) draw distinctions between global meaning and situational meaning (Park & Folkman, 1997, as cited in Fjelland, Barron & Foxall, 2000) and implicit and explicit meaning (Thompson & Janigian, 1988, as cited in Fjelland, Barron & Foxall, 2000). These distinctions are drawn for conceptual clarity during the assessment of the construct “meaning”. Global meaning or meaning in life is conceptually differentiated from meaning found in response to an event (usually negative) or situational meaning. Implicit meaning refers to an individual’s assessment of the threat of a negative event and explicit meaning to the outcome of such an assessment (Fjelland, Barron & Foxal, 2007). Recent advances in **meaning measurement theory** and research capture some subtle differences of these definitions by further distinguishing between personal

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meaning, spiritual meaning and informal meaning. Personal meaning relates to life satisfaction or a perception of purpose and coherence in one's life (Battista & Almond, 1973; Klinger, 1998; Reker, 2000; Yalom, 1980, as cited in Mascaro & Rosen, 2008).

One way to quantify meaning is to measure purpose in life. Ryff (1989, as cited in Makola & Van den Berg, 2008) defines *purpose in life* as feeling that there is meaning in life, having goals and a sense of directedness and having aims and objectives for living. Purpose in life is therefore an outcome of the discovery of meaning in life. Purpose in life can be measured by the Purpose in Life test (PIL) (Crumbaugh & Maholick, 1964, as cited in Mascaro and Rosen, 2008), the Life Regard Index (LRI) (Battista & Almond, 1973, as cited in Mascaro and Rosen, 2008) as well as the Life Purpose Questionnaire (LPQ), developed by Hutzell (1986), which measures the degree to which a person experiences meaning in his/her life (Hutzell, 1986).

The Seeking Noetic Goals test (SONG) was developed to assess the level of motivation needed to find additional purpose in life and was designed to work in conjunction with the PIL (Schulenberg, 2004), while the Meaning in Life Questionnaire-Search (MLQ-S) also measures the strength of motivation to find meaning in life. Other measures relate more directly to illness.

Although the Meaning in Suffering Test (MIST) measures the perception of having found meaning in suffering which can, but does not necessarily, relate to illness. The Search for Meaning Scale (SMS) measures the impact of the diagnosis on the individual's life and why the respondents believe the illness occurred. Certain instruments are classified by Fjelland, Barron and Foxall (2007) as "meaning in illness" instruments. The Life

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Evaluation Questionnaire (LEQ), the Positive Meaning and Vulnerability Scale's Positive Meaning subscale and the Significance of Illness-Part 1 (SOIS-Part1), all measure meaning as related to cancer diagnosis. The Significance of Illness Scale-Part 2 (SOIS Part 2) includes a subscale that assesses how often female cancer patients think of the significance of their illness (Fjelland, Barron & Foxall, 2007). The Positive Meaning subscale specifically measures meaning in breast cancer. The initial version of the Constructed Meaning scale also measured meaning in cancer; however, the later version measures meaning in any illness. The Meaning of Illness Schema (MOI) and the Meaning of Illness Questionnaire self-Report (MIQ-SR) also measure meaning in any illness.

The Spiritual Meaning Scale (SMS) (Mascaro & Rosen, 2008) defines Spiritual Meaning as the belief that life has a purpose, will or way in which individuals participate. Wong (as cited in Mascaro & Rosen, 2008) isolated seven factors that are normatively viewed as characteristic of someone whose life has meaning (implicit meaning) and constructed the Personal Meaning Profile (PMP) as a measure of the extent to which individuals exemplify these factors: achievement, relationship, religion, self acceptance, intimacy, fair treatment and self transcendence. According to Langle (as cited in Tomic & Tomic, 2008), self-transcendence is embedded in the theory of psychological maturity and plays a central role in the search for meaning.

Data from research studies using the measures above have highlighted common meaning pathways suggesting that engagement with self, others, the world and the transcendent are involved in the experience of meaning in life. Common meaning

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pathways include achievement related activities, artistic activities, interpersonal relationships, spirituality, altruism and self-transcendence (Marcano & Rosen, 2008).

### 2.4. **The Triangles Model**

Governed by the principles of PNI, neurosurgeon Dr Ian Weinberg noticed that the influence of the patient's personal life and psychosocial circumstances were largely ignored in the clinical environment. In an attempt to understand the anomalies he experienced in the clinical environment and to enable this bio-mechanistically trained health professional to practically assist patients where the biomedical model fell short, he developed and refined an immune enhancing programme based on a PNI model and called it The Triangles Model© (TM©)(Weinberg, 2009).

Today, this programme is accredited by the Health Professional Council of South Africa (HPCSA) and has been successfully used both within the clinical environment as well as in the corporate environment. The clinical application of the model has been applied as a supplement to conventional treatment of terminal and non-terminal patients. On occasion, the TM© has been offered and applied, with the knowledge and full consent of patients, in cases where conventional treatment for terminal cases was deemed futile.

The application was later adapted for and tested in the corporate environment in order to address wellness and performance challenges. In the corporate environment, the model is used as part of a leadership development strategy aimed at enhancing wellness through immune modulation, thereby decreasing absenteeism, diminishing stress and decreasing medical aid expenditure (Weinberg, 2009).

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Measurements and interventions in the context of the Triangles Model© (TM©) and the Triangles Model Assessment online version (TMA-o) (described below) also relate to *self-awareness* and an understanding of the internal processes of the individuals, which in turn, requires readiness for *self-revelation*. Only then can the individual start posing questions with the self (why I should /shouldn't remain as I find myself). Achieving internal control for these changes will then require the capacity of *self-distancing* and initiating internal growth requires the capacity for *self-transcendence*.

Self-transcendence and self-distance together form the personality-factor of existential meaning (Langle et al., 2003, as cited in Tomic & Tomic, 2008). They also suggest that self-distance is a prerequisite for self-transcendence (ibid). Self-distance is the ability to be independent of other people and circumstances, accept things as they are and the ability to distinguish oneself from the surrounding world. This is only obtained if the relevant information gathered from the object world is not distorted. Furthermore, a person must then understand qualitative relationships between the objects and themselves, and value them in order to enter into relationships with people and objects. None of this is possible without choice, freedom and responsibility (ibid).

The Triangles Model© (TM©) illustrates this intimate link of meaning and purpose and wellbeing with specific reference to work or career application, family and interpersonal relationships and recreation (Weinberg, 2009). The promotion of purpose in each life area or sphere and the subsequent integration of these areas, leads to an exponential increase in purpose and wellbeing, both for the individual as well as for the entire community (ibid).



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### 2.5. **The Triangles Model Assessment (online version) (TMA-o)<sup>6</sup>**

Drawing from the research in PNI and personal experience, the developer designed a self-completion questionnaire based on the Triangles Model©. The Triangles Model Assessment online version (TMA-o) was developed to render the principles of the Triangles Model © (TM) operational and practically applicable. To the knowledge of the researcher, it is the only one of its kind. There are no other tools, validated or otherwise, that aim to measure the effect of mind state on health using measures of purpose and lack of purpose (hopelessness) together with accepted blood screening parameters and self reported illness.

The questionnaires take approximately 30 minutes to complete and the questions are simple, short, clear and close-ended. The assessment comprises four sections and the outcome furnishes a review of the subject's context or environment (Verve Configuration, see Appendix B), archetype category (Verve Category, See Appendix B), a Cardiac Risk Index determined by the Framingham Index ([www.framinghamheartstudy.org](http://www.framinghamheartstudy.org)) (see Appendix B) and, if applicable, a Corporate Application Profile (see Appendix B).

The TMA-o and its output is divided into four distinct questionnaires, each with their own resultant output. Verve configuration (section one) and verve category (section two) both ask questions related to three spheres of life, namely, work, personal and interpersonal

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<sup>6</sup> An example of the questionnaire appears in Appendix A with the permission of Dr Weinberg who owns the Copyright and Intellectual Property rights.

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and recreation. The Corporate Application specifically relates to groups in the work environment and was added as the fourth and final section. This section is an opt-in section, while sections one to three are compulsory.

A multiple choice format is used in section one, a 4 point Likert scale (often, occasionally, seldom, never) in section two and a 5 point Likert scale (never, rarely, occasionally, often, always) in part A of section four. Parts B and C of section four require the individual to rank words that describe them in order of importance. The questionnaire also requests the input of demographic and medical information before allowing the participant to exit the webpage.

The spheres of work, personal / interpersonal, and recreation, relate to the Logotherapy values that are viewed as sources to discover meaning in life, for example, creative and experiential values. Creative values include work, career, advocacy or artistic pursuits, which align with the work application and the corporate application in the Triangles Model. Experiential values are reflected in both the personal and interpersonal relationships application and the recreation application. Loving another human being and experiencing the love of others suggests social support (Greenstein & Breibart, 2000) and therefore relationships with family, friends and colleagues, while the ability to appreciate beauty in nature and art, and humour relates to the application of recreational activities. These components are reflected together with vitality or “purposeful energy” (Weinberg, 2009, p. 45) in the resultant output and application of the TMA-o.

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It is important to mention that training is a critical prerequisite for the use this assessment tool and the public can only access the TMA-o results via trained facilitators.

### 2.5.1. **Verve configuration**

The first section of the questionnaire (Verve Configuration) is used to obtain the data relating to the situation or environment of the person. There are 13 items in this section. A multiple choice format is used in section one. The self-reported data is subsequently represented in the output as a triangular shaped illustration (see appendix B) that depicts the amount of time spent in a certain areas of life as well as the number and type of interactions in which one would typically engage (work, personal, interpersonal and recreational). It also enquires about the level of integration between such applications, which, in turn, is represented in the degree of overlap between the triangles.

The output of the verve configuration relates directly to the individual's perception of his / her current environment and life situation. Results are related to areas of work, personal/interpersonal relationships and recreation as well as the interface and integration of these life areas.

The illustration further includes a "pseudo-verve" ghost line (Weinberg, 2009, p. 88) that indicates the level of gratification or purposeful application of their efforts a person believes they currently enjoy in each of these two areas and is used to assess the level of PNI resilience or vitality, which refers to "purposeful energy" (Weinberg, 2009, p88). Subjective vitality is associated with an internal perceived locus of causality as well as with self actualisation, self-determination, mental health and self-esteem (Ryan & Frederick,

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1997). Ryan and Frederick (1997) further conceptualised the experience of vitality as an accessible and salient phenomenal marker of one's "health of spirit" (p. 557), which is affected by both psychological and somatic factors. Subjective vitality was therefore related to the individual's experience of physical health and to variables associated with a sense of agency, self-actualisation, and personal well-being.

The pseudo-verve lines are generated from items 12 and 13 and will be used in this research because they enquire directly about purpose in two areas of life, namely, work and relationships. The area that represents the work application is red in colour and the other, the personal and interpersonal application, is blue in colour. An example of this can be found in appendix B.

In the interpretation of this output, the pseudo-verve line is regarded as a more representative reflection of the score of the configuration. The implication of this is that a person may spend many hours at work or at home but not feel that those hours are meaningful, thereby (according to the model) reducing immunity and vitality, and consequently, possibly playing a role in activating the PNI chemistry as illustrated in chapter 2. It also serves as a check against respondent bias.

### 2.5.2. Verve Category

The verve category consists of 30 items and is the main focus of this research. A four point Likert scale (Often, occasionally, seldom, never) is used in this questionnaire. The output from these items plot individuals on a continuum (0-100) of low purpose or hopeless-helpless (Weinberg, 2009) at the one end of the scale and purposefulness on the

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other. This allows for the categorisation of individuals into five archetypes, each of which are related to a particular somatic manifestation (Weinberg, as cited in Daniels, 2010). Archetypes derived from The Triangles Model (Weinberg, 2009) include three primary archetypes namely Alpha (80+), Bravo (55-69) and Charlie (0-34) and two overlapping archetypes, namely Alpha-Bravo (70-79) and Bravo-Charlie (35-54). Secondary or overlapping archetypes typically include characteristics of both primary types. Each archetype is related to a certain health/illness profile.

During the course of this research, a postgraduate student from Middlesex University completed a comparative research study in which the Triangles Model Assessment online version (TMA-o) successfully correlated with the Identity Compass Profile (ICP). The ICP provides a report detailing the individual's preferred meta-programs. According to Neuro-linguistic Programming (NLP), meta-programs are mental processes that manage, guide and direct other mental processes. They are not conscious strategies, but sequences of internal representations made up of visual, auditory, kinesthetic, gustatory and olfactory sensory components (Hall, 2005). By clearly associating different meta-programs with each archetype, and having the benefit of clinical research-associated pathology per archetype, Daniels concluded that specific meta-programs positively correlate with the development of identifiable pathology (Daniels, 2010).

Broad characteristics of each primary archetype are summarised by Weinberg (2009) and Daniels (2010) as follows:

The Alpha Archetype (AA) can generally be described as purposeful (Weinberg, 2009), able to perceive the environment non-judgmentally, has high vitality, creates a long

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term vision based on an expansive world view, is able to realise the vision through action, can show preference for envisioning rather than action, plans for alternatives, trusts self and others, retains a good self image, is balanced, has an internal locus of control, understands and knows how to unselfishly fulfil his / her own needs, can entertain a strategic mindset ('big picture') as well as detail, thinks on a continuum rather than 'either or' and is able to self reference and self distance without losing sight of the 'other' (Daniels, 2010).

Pathology is rarely associated with this archetype (Weinberg, 2009).

The Bravo Archetype (BA) tends to be aggressive and driven by self-gain rather than purpose (Weinberg (2009), is highly ambitious, insensitive, has individualism as a primary importance, is self-referenced, independent of thought, makes decisions based on what is right for them, exhibits black and white thinking, rejects or distorts that which s/he does not know or understand, can be sceptical, pays attention to 'self', fulfils his / her own needs before those of 'others', prefers the observer role possibly resulting in emotional detachment, is future oriented, focuses on the task rather than relationships, values performance and achievement, embraces change and variety but prefers to follow specific and definite procedures before responding with numerous alternatives (Daniels, 2010).

This archetype is associated with cardiovascular disease, obesity and diabetes (Weinberg, 2009).

The Charlie Archetype (CA) expresses the lowest levels of purpose as characterised by a hopeless-helpless mind- state (Weinberg, 2009), has external locus of control and a strong focus on 'others', cares primarily for others, puts their own needs second, fulfils the needs of 'others' often to the detriment of self, can be conditional or manipulative, gives

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priority to relationship(s) in a work context rather than the task, often adopts a guarded and defensive position, tries to create good relationships with others as a success strategy, typically values both tangible objects (possessions) and intangibles like status or rank, prefers 'sameness', avoids what they do not want, focuses on what is undesired or what went wrong and is subject to feelings of guilt and regret. According to Hall (2005), the meta-programs related to the CA are often associated with depression, perhaps becoming embittered and believing that the past has imprisoned them (Hall, 2005, as cited in Daniels, 2010). This archetype is associated with the development of chronic inflammation, infections, autoimmune disease and tumours (Weinberg, 2009).

It is important to note that archetypes are not fixed, but rather combinations of categories and configurations (Weinberg, 2009). As illustrated by the correlation of archetypes with meta programs used in the ICP, individuals will display preferred or habitual cognitive strategies. Individuals will display behaviour typical of an archetype, but can think, behave and feel the emotions of the entire cluster. Although the TM© posits that these configurations result from of nature (genetics), nurture (learned behaviour), current context (environment or situation) and perceived ability to cope, it does not negate freedom of choice or responsibility. This aspect reflects the attitudinal values of Logotherapy.

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### 2.5.3. **The Framingham Index and medical conditions**

The Framingham Index (section three) requires the input of easily obtained medical information, including height, weight, girth (waist circumference), diabetic status, smoker or non-smoker, blood pressure and cholesterol levels (see Appendix A).

The Framingham Heart Study started in 1948 with the aim to identify the common factors or characteristics that contribute to cardiovascular heart disease (CVD). Following a large group of participants, who had not yet developed overt symptoms of CVD or suffered a heart attack or stroke, over a long period of time led to the identification of the major cardio-vascular disease risk factors. The study also made known valuable information regarding the effects of related factors, such as blood triglyceride and HDL cholesterol levels, age, gender, and more importantly, psychosocial issues. Impatience, achievement striving, competitiveness, and hostility, and more recently, dominance and suppressed aggression (Perini, Muller & Buhler, 1991; Smith, 2003), have emerged as significant risk factors for the development of CHD and premature mortality (Smith, 2004).

In an empirical study of the associations between hopelessness and a variety of mortality outcomes, Everson et al. (1996) linked emotional states with distinct cardiovascular, immunological and neuroendocrine patterns of activation. Hopelessness, for example, was indicated as a predictor of first myocardial infarction (ibid) as well as ischemic heart disease morbidity and mortality (Anda, Williamson, Jones et al., (1993), as cited on Everson, 1996). In the same study, hopelessness was independently associated with cancer deaths (ibid).



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In fact, the cardiovascular system is only one part of a conglomeration of systems that are directly and indirectly influenced by immune chemistry. The Framingham Index relates specifically to CVD and only represents one system of many that are affected by the immune system.

As the Framingham Index only requires information in relation to CVD, further information about other medical conditions is self reported at the end of the questionnaire. These medical conditions are then categorised according to the following groups: inflammatory, psychiatric, thyroid, neurological, cardiovascular, sleep related and tumour. This text data is important as it allows for the exploration of medical conditions affected by the immune pathways in addition to the Framingham Index measures.

### 2.5.4. **Corporate Profile**

The Corporate Profile makes up the final section of the TMA-o and is an opt-in section. Only individuals in corporate companies or teams are required to answer this section as it required information relating to the work environment and group dynamics in particular. Data from this section was not used in this research.

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### **Chapter 3: Research Design and Methodology**

Research in Logotherapy substantiates the influence of meaning on mental and emotional health while PNI corroborates many of the effects of mental and emotional health on physical health and vitality. Schulenberg et al. (2007, as cited in Melton & Schulenberg, 2008) recommend that many more studies concerning the PNI influences of meaning in relation to a person's well-being, are needed. When considering what is known on the subject of bidirectional immune pathways and their effects, it is hypothesised that purpose (as an expression of meaning) can, either indirectly or directly, affect vitality and physical health. It is further proposed that meaning and purpose reflect, at least in part, a universal and uniquely spiritual dimension and should therefore be included in definitions of health.

#### **3.1. Research design**

The main objective of this quantitative study was based on the assumption that a higher level purpose or meaning should result in fewer reports of ill health and higher levels of vitality. Conversely, a loss of purpose should correlate with reports of a greater number of medical conditions and lower vitality.

Initially, the researcher launched a pilot study using a combined method or mixed method study approach (Vos, 2005), using both quantitative and qualitative data-collection procedures. An intact group comparison design (Bless, Higson-Smith, Kagee, 2006), that is, a pre and post-test between groups design, was employed to conduct the pilot study in order to explore both the relationship between variables and the differences between groups

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of subjects, by means of a search for meaning instrument, a self constructed self report medical questionnaire, and the TMA-o. Five participants from a group attending a Logotherapy course were randomly selected for a semi-structured interview on completion of their course. This pilot test was an attempt to validate the TMA-o by constructing a research battery that measured variables independently by means of a validated instrument (a Life Purpose Questionnaire or LPQ).

As a result of the pilot study, the researcher concluded that without being able to generate a large amount of data, quantitative analysis would not be viable. The pilot study did, however, assist in a deeper understanding of the concepts employed throughout this dissertation. The subsequent decision was to use data from the TMA-o to explore possible correlations and models in line with the aim of this dissertation. This is achieved by examining the data captured from the questionnaire, which not only includes items regarding purpose, but is also connected to the science of PNI.

This dissertation follows from the pilot study, which constitutes an exploratory and questionnaire based study aimed at examining the correlation between purpose and physical health conditions as evidenced by vitality and medical conditions including, neurological, psychiatric, cardio vascular, tumours, thyroid conditions, sleep disturbances and inflammatory conditions. Subjective vitality is characterised by purposeful energy (Weinberg, 2009, p. 88), as well as the reported level of energy and the prevalence of ailments and viral infections, suggesting suppressed immunity.

The researcher's aim is to ascertain the relationship between the reported level of purpose and vitality using secondary data captured over a five-year period. Data from the

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Triangles Model Assessment (TMA-o) was utilised in this research. The TMA-o is based on the TM© which is concerned primarily with wellness and performance. Major assumptions underlying both the model and the instrument is that low purpose scores correlate with suppressed immunity leading to an increased likelihood of illness and a decrease in vitality and wellbeing, and conversely, that high purpose scores improve vitality and decrease the likelihood of illness. The online version of the Triangles Model assessment (TMA-o)(Weinberg, 2009) is therefore based on the principles of PNI and uses meaning and purpose as primary measures of immunity and therefore, the overall state of health.

Other than the research carried out by Daniels (2010), in which a correlation was found between archetypes resulting from the Verve Category of the TMA-o and the meta programs identified in the Identity Compass, the validity and reliability of this instrument as a whole has not been reported or is unknown. This could constitute a limitation for this research and will be addressed in the discussion chapter.

The TMA-o categorises individuals based on their perceptions, emotions, cognitive strategies and resultant state of mind, and links the effect of these mind states on the individual's health. The instrument is inclusive of the principles of Logotherapy and PNI, rendering it a natural choice when investigating the link between purpose and health. The Triangles Model© also includes concepts such as hopelessness, helplessness, fear, anxiety, aggression, hostility and purposeful energy; however, the main principle is that the level of purpose is related, through PNI, to physical health. This is then measured through the TMA-o.

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In the initial exploratory factor analysis (EFA) purpose, hopelessness and fear were used as variables as they are posited as the key concepts of the TM©. Because the questionnaire has not previously been subjected to peer reviewed reliability and validity tests, it was crucial for the researcher to determine whether the variables or factors did include “purpose”, before proceeding with further statistical analysis.

The decision to examine the questionnaire first resulted in using items from the Verve Category (section 2), two items from the Verve Configuration (section 1), the Framingham Index and self reported medical conditions, for this study. The TMA-o (Section2: verve category) was tested for internal consistency and subjected to factor analysis. Based on the outcome, certain items were removed and the remaining items were subjected to a second factor analysis. Subsequent to preliminary EFA, final factors were selected and labelled purpose, fear, vitality and aggression. These factors are already well defined and researched in relation to the impact they exert on immunity and how they influence health. They are also a natural fit with the principles of dimensional ontology in Logotherapy, the principles of the TM© and TMA-o and are aligned with the requirements of the dissertation.

Subsequently, multivariate correlations were tested and finally, data was subjected to stepwise regression. The research questions are therefore exploratory and descriptive.

More specifically, the aims are:

To examine the relationship of purpose (having meaning or living meaningfully) with vitality and presence of self reported medical conditions. This will be achieved by:

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1. Investigating TMA-o to determine its level of reliability for this research.
2. Exploratory factor analysis.
3. Testing the reliability of selected factors.
4. Determining the relationship between purpose and health with regression analysis

(stepwise regression)by:

- a. Exploring the correlation of purpose with the pseudo-verve (work) and pseudo-verve (personal/interpersonal) scores that are representative of 'purposeful energy'.
- b. Exploring the correlation between Verve category (behavioural archetype) with purpose, aggression, fear, and vitality.
- c. Exploring the relationship between medical correlations and purpose.
- d. Modelling vitality and medical conditions with purpose, fear, and aggression.
  - i. Purpose with vitality; total cholesterol; Body Mass Index (BMI); diabetic (Yes/No); blood pressure (diastolic and systolic); medical diagnosis (Yes/No), self-reported medical conditions and smoking.
  - ii. Fear with vitality, total cholesterol; Body Mass Index (BMI); diabetic (Yes/No); blood pressure (diastolic and systolic); medical diagnosis and (Yes/No), self reported medical conditions, smoking.
  - iii. Aggression with vitality, total cholesterol; Body Mass Index (BMI); diabetic (Yes/No); blood pressure (diastolic and systolic); medical diagnosis (Yes/No), self reported medical conditions, and smoking.

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Variables include the level of purpose, fear/anxiety, aggression and the effects on vitality and reported medical conditions; the relationship of each variable to the virtue categories (which aims to reflect reported levels of purpose or hopelessness) and the correlation of each variable with both work and personal interpersonal pseudo-virtues (red and blue).

While validated research instruments for search for meaning, meaning and illness, and wellness, do exist, none are available online and each of these instruments are used separately from the other. In addition, available instruments do not include general or actual illness health measures, have not been tested on a South African population, and do not have predictive possibilities. The TMA-o is the only tool, to my knowledge, that seamlessly integrates contextual, cognitive, affective, attitudinal and actual medical parameters in one 'easy-to-access' online battery. The TMA-o is widely accessible, and therefore not geographically limited.

Although the TMA-o instrument is based on the Triangles Model©, the researcher has not included model testing nor the testing of the overall reliability and validity of the TMA-o in the aims of this particular study.

### **3.2. Data collection procedure**

Answers to the TMA-online questionnaire are automatically and electronically captured on completion of the questionnaire. Data sources include numeric and text data. All four sections of the questionnaire produce numeric data. On completion of the questionnaire, an option is given to answer demographic questions and report any other

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medical problems. These problems were classified into seven categories during the research for the purpose of statistical analysis.

All captured data are stored in an offshore server and only the developer can grant access to the data. The researcher was given access to the raw data generated by the TMA-o and was permitted by the developer to use the data for research purposes. The entire questionnaire is self reported and can be repeated at three monthly intervals. It is currently most often used in two environments: clinical/medical settings, and more often, executive coaching interventions; for that reason, measures are often based on data collection pre-, post- or during an intervention. The ambit of this research does not currently include the evaluation of interventions. Keeping within the scope of this research, its aims and objectives, the second and third response sets were excluded.

After obtaining permission from the developer, the source codes and the latest data set were obtained from the Webmaster and subsequently screened for errors and repeats. Data from 2005 to 2010 were extracted from this source and presented to the researcher in .csv format that was later imported to a statistical programme, SAS JMP 9.

### 3.2.1. **Ethical considerations:**

The questionnaire is completed almost exclusively in either a training context in which the model is fully explained or as part of an intervention, such as executive coaching. The results are never sent directly to the respondent but always communicated by a fully accredited and trained facilitator whom the respondent has personally selected.



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With regard to the data, it is made explicit in the preamble to the questionnaire that the information is the property of the developer. There are no identifying features in the data set, apart from the names of people who have completed the assessment. The names of the respondents were removed, which addresses any ethical concerns that may have arisen as a result.

### 3.3. Sampling

The study employed secondary data to test the hypotheses. No sampling procedure was therefore used given that existing data are analysed. A procedure in terms of which secondary data were collected via questionnaire responses was selected to ensure that sufficient responses of factual, standardised data are collected for statistical analysis.

The initial sample consisted of 1590 responses, which included pre and post intervention assessment results. The TMA-o is designed to capture more than one assessment response in order to capture pre and post intervention measurements. Many respondents have used the assessment on more than one occasion over the six years it has been available online. After removing repeats and errors, the final sample size of 1405 respondents was used for data analysis.

The instrument has been used mainly in the South African context and the majority of the data stem from a South African sample. The only stringent requirement for inclusion in the sample used for this study is that an individual must have completed at least one TMA-o.

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The majority of participants 1116 (98.4%) ( $N = 1133$ ) are South African of which 624 (54.2%) ( $N = 1150$ ) are female and 526 (45.7%) are male. Married participants constitute 780 (67.2%) ( $N = 1159$ ) of the total followed by 264 (22.7%) single participants. Participants aged 30-39 comprise the largest group at 529 (45.6%) ( $N = 1160$ ), followed by 341 (29.3%) of the participants aged 40-49. The balance consists of 167 (14.3%) participants aged 20-29, 107 (9.2%) aged 50-59 and 16 (1.3%) aged 60 and older. Participants classified as 'professionals' constituted 696 (54.2%) ( $N = 1282$ ) of the entire group, while 362 (28.6%) managers, 105 (15.2%) executives, and 29 (2.2%) medical practitioners comprised the remainder.

No information relating to level of education, culture or language is available.

### 3.4. Data analysis procedure

To achieve these research objectives, statistical analyses of 1405 responses to the TMA-o were investigated using SAS JMP version 9.0.

The researcher's data analysis includes:

1. Descriptive statistics.
2. Exploratory Factor analysis to identify the underlying structure and confirm the dimensions or factors.
3. Factor extraction and rotation.
4. Analysis of the reliability of the subsequent selected factor clusters by calculating Cronbach's alphas.

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5. Determining the degree and form of the relationship between purpose, fear, aggression and vitality with pseudoverve and self reported medical problems using ANOVA and correlations.
6. Stepwise regression with the aim to build and explore various models.

## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

**Chapter 4: Results**

In this chapter, the results include biographical information, the determination of factors, reliability testing, the calculation of factor scores, the exploration of correlations and regression analysis.

**4.1. Biographical information**

Information about the participants includes the number of hours of work, their role or roles in the work environment, work relationships, level of fulfilment reported at work and at home, questions relating to family and recreational activities and finally responses with regards to medical conditions.

**Hours of work and roles at work**

From the total sample ( $N = 1405$ ), 948 (67.4%) participants indicated that they work 9-12 hours per day compared to 263 (18.7%) and 174 (12.3%) who worked 5-8 hours and 13-16 hours respectively. At work, 602 (42.8%) claimed to have four or more roles to fulfil while only 116 (8.2%) fulfilled only one role. The remaining 347 (24.6%) and 340 (24.1%) fulfilled three or more and two or more work roles, respectively.

**Relationships at work and home**

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The majority, 1334 (94.9%), did not work in a family owned business of which 1142 (81.2%) did not work with a close friend or family member but 1079 (76.7%) claimed to maintain awareness of family and friends while at work. A further 897 (63.8%) did not share any recreational activities with work colleagues as opposed to 614 (43.7%) who chose to share recreational activities with friends and family. The majority, 964 (68.6%), spent one to two hours a day in recreational activities. A total of 672 (47.8%) participants spent 3-5 hours per day interacting with family and friends with 718 (51.1%) claiming to interact with 4 or more family members and friends.

### Level of fulfilment at work and home

With regard to self reported levels of fulfilment at work, 139 (9.8%) reported 100%, 731 (52%) an 80%, 432 (30.7%) a 50%, and 103 (7.3%) a 20% level of fulfilment at work. When reporting the level of fulfilment at home, 187 (13.3%) reported 100% fulfilment at home, 674 (47.9%) reported 80%, 426 (30.3%) reported 50% and 118 (8.3%) reported 20% fulfilment at home.

With regard to self reported levels of fulfilment at work and at home, 867 (61.8%) reported an 80% and higher level of fulfilment at work with a similar number, 861 (61.2%), reporting the same level of fulfilment at home.

#### 4.1.1. **Medical conditions**

With regard to medical conditions, 808 ( $N = 1129$ ) (71.5%) participants, reported no medical conditions while 321 (28.4%) reported conditions such as hypertension,

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hypercholesterolemia, diabetes, cancer, inflammatory conditions, anxiety, depression, thyroid conditions, asthma, allergies, migraine and a range of other conditions. A large number of participants, 761 ( $N = 913$ ) (83.3%), declared themselves non-smokers while 888 ( $N = 910$ ) (97%) reported being non-diabetic. The 771 participants who reported their height and weight displayed a body mass index (BMI) slightly above the recommended BMI range of 18.5-25 ( $M = 26.1$ ,  $SD = 4.5$ ).

Means for Cholesterol ( $N = 359$ ,  $M = 4.9$ ,  $SD = 1.03$ ) indicated nothing out of the ordinary. Without separating responses from male and female participants, girth circumference ( $N = 710$ ,  $M = 89.8$ ,  $SD = 17.1$ ) indicated several participants well above the normal recommended ranges for girth, which could relate to the higher than average reported BMIs; however, as no separation was made between male and female respondents, this result is quite likely. Diastolic blood pressure (systolic  $N = 404$ ,  $M = 117.5$ ,  $SD = 16.5$ ; diastolic  $N = 322$ ,  $M = 82.7$ ,  $SD = 13.5$ ) also indicated that several participants fell well above the normal recommended ranges while the systolic blood pressure indicated some values both above and below the recommended values.

The biographical information of this sample indicated that a similar number of males and females, married, professionals, aged 30-39 work 9-12 hours a day and have 4 or more roles at work. While they claim to be fulfilled at work, they do not work with close friends or family and do not share recreational time with people at work. However, at home, they spend time with family and seem to have regular recreation time. Although only almost 30% report some type of illness and the majority are non-smokers and non-diabetic, they do indicate above average BMI and girth measurements, which is usually indicative of

## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

diseases relating to lifestyle. In brief, one could deduce that they are middle class and reasonably affluent professionals.

### 4.2. Determining the dimensions/factors

According to research, a sense of purpose can affect the state of an individual's health as well as their recovery from illness (Frankl, 1988; Kang, et al., 2009; Lukas, 2000; Everson, et al., 1996; Schulenberg, 2004). These findings align with the principles of Logotherapy as well as the PNI underpinnings of the Triangles Model as described in detail in Chapter 2. Building on previous research, Logotherapy and PNI, the researcher set out to explore this relationship.

#### 4.2.1. Exploratory Factor Analysis

Factor analysis (FA) considers the interrelationships among variables and explains these variables in terms of their underlying factors. In this case, the researcher employed exploratory factor analysis to analyse the instrument in order to determine whether the data supports the assumed factor structure of purpose, hopelessness and fear, as indicated by PNI research.

Pallant (2007) recommends that the overall sample size for factor analysis should be more than 150 cases, while Tabachnick and Fidell (as cited in Pallant, 2007) suggest at least 300 cases. It is further suggested by Pallant (2007) that there should be at least 5 cases for each variable, while others, such as Nunnally (cited in Pallant, 2007), recommend

## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

10 cases for each item to be factor analysed. As there are only 30 items used for this factor analysis and there are more than 300 cases, this assumption was met. The use of factor analysis in this research therefore meets these criteria (10 cases per item) as there are in excess of 900 (30 items  $\times$  300 cases) cases in the data set.

### **4.2.1.1. Preliminary factor analysis**

Initially, the three assumed variables, purpose, hopelessness and fear, determined by the TM©, were subjected to reliability tests resulting in Cronbach's alpha of .84 for purpose, .78 for hopelessness and .6 for fear. Subsequently, an exploratory approach was adopted and a **preliminary** principal component analysis was conducted to extract the underlying factors from the original 30 items of the Verve category scale. This was followed by factor rotation using the oblique quartimin method. Oblique methods allow for the factors to be correlated. Seven factors were initially extracted with six having eigenvalues of 1.0 or more (Table 4.1). The preliminary rotated factor loadings yielded by the factor analysis are illustrated in Figure 4.2, and the communality estimates are presented in Table 4.3.



## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

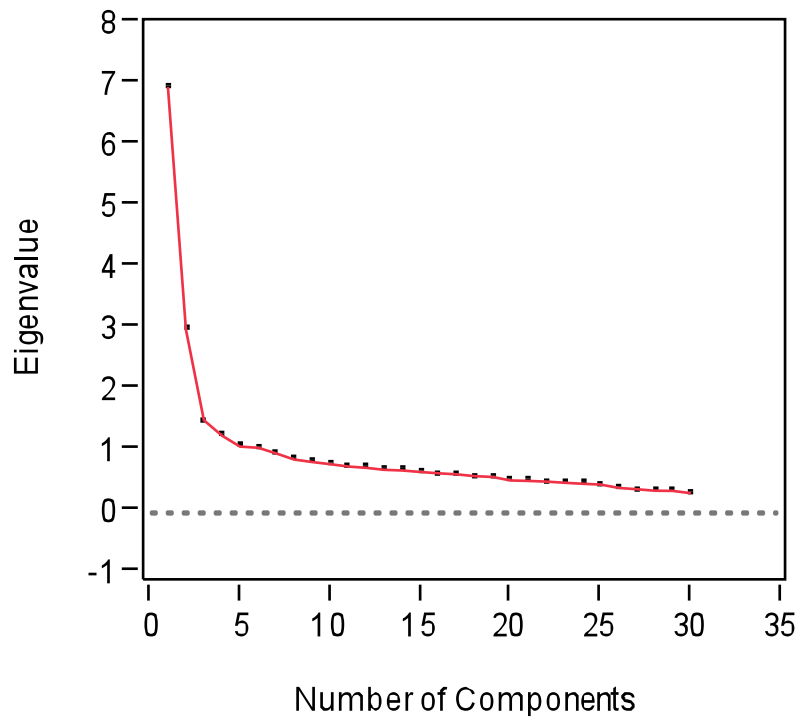


Figure 6. Preliminary scree plot for TMA-o (7 factors).

## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

Table 1

*Preliminary factor analysis of TMA - O*

Rotated Factor Loading	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Cat1 2	-0.059472	0.260350	0.290472	0.268531	-0.030516	0.057456	0.172433
Cat2	0.157250	0.170084	0.075095	-0.028679	0.511144	0.115115	-0.056322
Cat3	0.234381	-0.046893	0.027749	-0.028238	0.342911	-0.052006	0.0167111
Cat4 2	0.091557	0.041618	0.130839	0.650885	-0.090656	-0.022406	0.102045
Cat5 2	-0.049003	0.074745	0.173061	0.103630	-0.026189	-0.338366	0.090707
Cat6	0.563167	0.138215	-0.005957	-0.050221	0.074222	0.025036	0.189286
Cat7 2	0.137214	0.060397	0.657480	0.074836	0.024149	0.005918	-0.064909
Cat8 2	-0.036209	-0.043427	0.462856	0.104709	0.080456	0.041741	0.026890
Cat9	0.379619	-0.021554	0.046063	-0.034113	0.189052	-0.102779	0.384428
Cat10 2	0.003016	0.193184	0.302766	0.025568	0.002829	-0.007653	0.188867
Cat11	0.114491	-0.079940	-0.165451	0.185889	0.266235	-0.073631	-0.077163
Cat12 2	0.216512	0.036112	0.615671	-0.044264	-0.033260	-0.067883	-0.096959
Cat13	0.420123	0.106317	0.109861	0.000722	0.245949	0.021228	0.139659
Cat14 2	-0.009320	0.008011	0.054524	0.607880	-0.053805	-0.089174	-0.032141
Cat15 2	0.038677	0.631414	0.026294	0.020705	0.090556	-0.035178	-0.116914
Cat16	0.720001	0.066111	0.191819	0.015739	-0.005109	0.060055	-0.1960643
Cat17	-0.0+5841	0.043737	0.096851	-0.067743	0.565502	0.058851	0.046494
Cat18	0.445586	-0.162278	0.178497	0.035278	0.083868	-0.126070	0.119051
Cat19 2	0.101111	0.350166	0.036945	-0.080516	0.019014	-0.408261	0.007454
Cat20 2	0.132862	0.652776	0.072742	0.088703	-0.006471	0.052543	0.096972
Cat21 2	-0.059662	0.416608	0.004664	0.259195	0.13522	-0.063621	-0.091115
Cat22	0.159762	-0.015804	0.007253	0.104250	0.227006	-0.030951	0.285397
Cat23	0.082438	0.063703	0.097094	-0.087796	0.101047	0.566170	0.043328
Cat24 2	0.161552	0.465586	0.081374	0.039682	-0.010104	-0.142182	0.067166
Cat25 2	0.024134	0.198846	0.013382	0.298137	0.159010	-0.172976	-0.256849
Cat26	0.359284	0.122511	0.006161	0.036680	0.152252	0.094283	0.017934
Cat27 2	0.043865	0.374176	0.086341	0.237308	-0.119801	0.070148	0.268154
Cat28 2	-0.155052	0.115330	0.231527	0.071708	0.098573	-0.127655	0.163939
Cat29	0.294697	-0.020032	-0.054710	0.046970	0.180198	0.025263	0.289157
Cat30	0.700651	0.062424	-0.010616	0.076205	-0.028510	0.039173	0.060934

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## Final factor analysis

Several items from the preliminary analysis, however, loaded below .3 (Pallant, 2007) and were subsequently removed. A second analysis and rotation (the same oblique quartimin that was used previously) was performed using the seventeen retained items.

Table 2

*Final Factor analysis and Communalities Estimates*

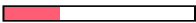
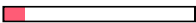

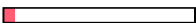
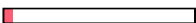
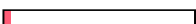
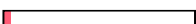


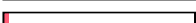
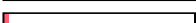
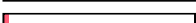
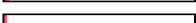
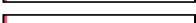
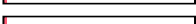
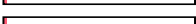
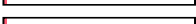
Rotated Factor	Factor 1	Factor 2	Factor 3	Factor 4	Communality Estimates
Cat4 2	0.109430	0.032118	0.059577	0.712092	0.61363
Cat6	0.751110	0.161535	-0.063195	-0.063247	0.60887
Cat7 2	0.002886	0.054496	0.783094	-0.009040	0.65289
Cat8 2	-0.030812	-0.013939	0.470832	0.055895	0.22653
Cat9	0.646825	-0.031209	-0.005165	0.028036	0.40788
Cat12 2	0.068999	0.080555	0.581326	-0.051683	0.40990
Cat13	0.618943	0.083906	0.060350	-0.007334	0.46976
Cat14 2	-0.051268	0.068503	0.007423	0.603766	0.39548
Cat15 2	-0.020465	0.707915	0.047333	-0.081257	0.48284
Cat16	0.615274	0.016910	0.123665	-0.048685	0.46407
Cat18	0.553548	-0.175006	0.101924	0.088269	0.33513
Cat19 2	0.062339	0.402789	0.010004	0.085976	0.22594
Cat20 2	0.146489	0.610479	0.116011	0.038325	0.58106
Cat21 2	-0.044446	0.474811	0.001134	0.222044	0.34222
Cat24 2	0.061168	0.453607	0.101416	0.044131	0.31179
Cat26	0.479802	0.102952	-0.031901	-0.030224	0.25369
Cat30	0.730811	-0.017245	-0.056710	0.037334	0.49758

The researcher employed Kaiser's criterion (factor 1 eigenvalue = 5.18; factor 2 eigenvalue = 2.03; factor 3 eigenvalue = 1.16; factor 4 eigenvalue = 1.05) and scree plot (Table 4.2) to decide on how many factors to retain. Four factors indicated eigenvalues of 1.0 or more and were subsequently retained (Table 3).

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Table 3

*Final Eigenvalues*

Number	Eigenvalue	Percent	Percent	Cum Percent	ChiSquare	DF	Prob>ChiSq
1	5.1894	30.526		30.526	6930.53	152.000	<.0001*
2	2.0398	11.999		42.525	2422.49	135.000	<.0001*
3	1.1653	6.855		49.380	1215.73	119.000	<.0001*
4	1.0534	6.196		55.576	892.155	104.000	<.0001*
5	0.8858	5.210		60.787	617.818	90.000	<.0001*
6	0.7658	4.505		65.291	456.731	77.000	<.0001*
7	0.7281	4.283		69.574	366.643	65.000	<.0001*
8	0.6655	3.915		73.489	284.723	54.000	<.0001*
9	0.6426	3.780		77.269	229.584	44.000	<.0001*
10	0.6210	3.653		80.922	174.870	35.000	<.0001*
11	0.5723	3.367		84.288	118.207	27.000	<.0001*
12	0.5507	3.239		87.527	77.895	20.000	<.0001*
13	0.4998	2.940		90.467	35.633	14.000	0.0012*
14	0.4356	2.562		93.029	9.835	9.000	0.3640
15	0.4180	2.459		95.488	4.720	5.000	0.4510
16	0.3948	2.322		97.811	1.221	2.000	0.5432
17	0.3722	2.189		100.000	0.000	0.000	.

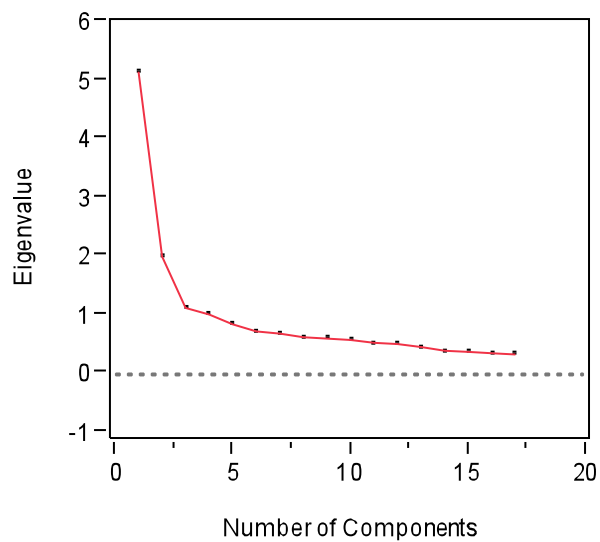


Figure 4.2: Final Scree plot.

## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

Eigenvalues represent the amount of variance accounted for by a factor. Ideally the retained factors should account for nearly all the variance. The four factors account for 55.5% of the cumulative proportion of common variance (Table 3).

The four factors that were retained were labelled *purpose* (factor 1)(eigenvalue = 5.18), *fear* (factor 2) (eigenvalue = 2.03), *vitality* (factor 3)(eigenvalue = 1.16) and *aggression* (factor 4) (eigenvalue = 1.05) (Table 3).

These factors combine logically because one would expect *purpose* and *vitality* to be associated in a positive manner and that *fear* and *aggression* would be inversely related or unrelated to *vitality*. *Purpose* has already been linked to enhancement of health and wellbeing in previous chapters. Subjective *vitality* has been shown to be associated with self-actualisation, self-determination, mental health, self-esteem and self-motivation (Ryan & Frederick, 1997). Conversely, indexes of intrapsychic distress were associated with less vitality (ibid.). *Fear* is indicative of the stress response, which in turn has been linked to immuno-suppression (Weinberg, 2009). *Anger* has been associated with medical conditions such as cardiovascular heart disease and metabolic syndrome (Niaura, Torado, Stroud, Spiro, Ward & Weiss, 2002).

In essence, the difference between the initial expected factors as based on the TM© was that items relating to novelty seeking and competitiveness were eliminated, while items relating to vitality created a 'new' factor. *Fear* and *aggression* were separated into two factors, while *purpose* presented as a common and consistent factor.

## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

Although the initial factors (as posited by the model) were close but not exact matches, the final factors, especially *purpose*, were still in line with the research aims and objectives.

### 4.2.2. Reliability testing

Cronbach's alpha coefficients were subsequently calculated to check the internal consistency of each factor cluster. This was performed to ensure that each cluster measures the same underlying construct. Ideally, Cronbach's alpha coefficient should be above .7 (Pallant, 2007, p. 95).

#### 4.2.3.1. Factor 1: Purpose

Seven items were retained for factor 1 (*purpose*), namely items 6 (factor loading = .75), 9 (factor loading = .64), 13 (factor loading = .61), 16 (factor loading = .61), 18 (factor loading = .55), 26 (factor loading = .49) and 30 (factor loading = .73). The questions relate to how often the person feels successful, feels purposeful about the future, is inspired to go to work, feels contented with existing activities, feels good about previous successes, experiences a positive response from the work environment and how often s/he feels that things 'fall into place'. The Cronbach's alphas for this group are the highest for all the clusters at .82.

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Table 4

*Inter-item correlations and Cronbach's Alpha for factor 1, purpose. Correlations*

<i>Inter-item correlations and Cronbach's Alpha for factor 1, purpose. Correlations</i>	Cat6	Cat9	Cat13	Cat16	Cat18	Cat26	Cat30
Cat6	1.0000	0.5175	0.5127	0.4770	0.3944	0.4604	0.5287
Cat9	0.5175	1.0000	0.4837	0.3639	0.3804	0.2625	0.4258
Cat13	0.5127	0.4837	1.0000	0.4874	0.3677	0.3363	0.4329
Cat16	0.4770	0.3639	0.4874	1.0000	0.3785	0.3168	0.5582
Cat18	0.3944	0.3804	0.3677	0.3785	1.0000	0.2465	0.3927
Cat26	0.4604	0.2625	0.3363	0.3168	0.2465	1.0000	0.3387
Cat30	0.5287	0.4258	0.4329	0.5582	0.3927	0.3387	1.0000

Cronbach's $\alpha$										
	A	-0.8	-0.6	-0.4	-0.2	0	0.2	0.4	0.6	0.8
Entire Set	0.8299									
Excluded										
Col	A	-0.8	-0.6	-0.4	-0.2	0	0.2	0.4	0.6	0.8
Cat6	0.7892									
Cat9	0.8089									
Cat13	0.8010									
Cat16	0.8020									
Cat18	0.8201									
Cat26	0.8381									
Cat30	0.7975									

**4.2.3.2. Factor 2: Fear**

The items for factor 2 (*fear*) are 15 (Factor Loading = .70), 19 (factor loading = .4), 20 (factor loading = .61), 21 (factor loading = .47) and 24 (factor loading = .45). These questions enquire about the levels of feeling intimidated, envious, experiencing negative self-esteem, fearing loss and accepting criticism poorly. The Cronbach alpha for this cluster is 0.73.

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Table 5

Inter-item correlations and Cronbach's Alpha for factor 2, fear

<i>Correlations</i>	Cat15 2	Cat19 2	Cat20 2	Cat21 2	Cat24 2
Cat15 2	1.0000	0.3218	0.4996	0.3797	0.3550
Cat19 2	0.3218	1.0000	0.3592	0.2677	0.2815
Cat20 2	0.4966	0.3592	1.0000	0.3947	0.4319
Cat21 2	0.3797	0.2677	0.3947	1.0000	0.3277
Cat24 2	0.3550	0.2815	0.4319	0.3277	1.0000

Cronbach's $\alpha$										
	a	-.8	-.6	-.4	-.2	0	.2	.4	.6	.8
Entire Set	0.8299									
Excluded										
Col	a	-.8	-.6	-.4	-.2	0	.2	.4	.6	.8
Cat6	0.6729									
Cat9	0.7256									
Cat13	0.6509									
Cat16	0.7026									
Cat18	0.6981									

**4.2.3.3. Factor 3: Vitality**

Factor 3 (*vitality*) constitutes items 7 (Factor Loading = .78), 8 (factor loading = .47) and 12 (factor loading = .58). These questions enquire about the level of energy, difficulty with getting up in the morning and the frequency of experiencing general ailments and viral infections (such as flu). The Cronbach's alpha for this group is .65, which is lower than the criterion of .7 indicating that the items may not be measuring the same underlying construct. On the other hand, Cronbach's alphas are sensitive to the number of items in a scale. In the event that there are less than 10 items, it may be better to examine the mean



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inter-item correlation. Inter-item correlations should range from .2 to .4. In this instance, the scores are  $r = .38$  and  $r = .51$ , respectively.

Table 6

Inter-item correlations and Cronbach's Alpha for factor 3 vitality

Correlations	Cat7 2	Cat8 2	Cat12 2
Cat7 22	1.0000	0.3888	0.5105
Cat8 2	0.3888	1.0000	0.2852
Cat12 2	0.5105	0.2852	1.0000

Cronbach's $\alpha$											
	a	-.8	-.6	-.4	-.2	0	.2	.4	.6	.8	
Entire Set	0.6558										

Excluded											
Col	a	-.8	-.6	-.4	-.2	0	.2	.4	.6	.8	
Cat74 2	0.4251										
Cat84 2	0.6656										
Cat12 2	0.5571										

#### 4.2.3.4. Factor 4: Aggression

Items retained for factor 4 (*aggression*) are items 4 (factor loading = .71) and 14 (factor loading = .6) and ask about being feeling argumentative and feeling aggressive and explosive, respectively. Cronbach's alpha for this cluster is the lowest at .64. However, as already pointed out with regard to Factor 3, this could be an indication that the items may not be measuring the same underlying construct. Cronbach's alphas, however, are sensitive to the number of items on a scale, especially when there are fewer than 10 items, in which case the inter-item correlations should ideally range between .2 to .4. In this case  $r = .48$ .

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Table 7

*Inter-item correlations and Cronbach's Alpha for factor aggression*

Correlations	Cat14 2	Cat114 2
Cat14 2	1.0000	0.4812
Cat114 2	0.4812	1.0000

Cronbach's $\alpha$										
	a	-.8	-.6	-.4	-.2	0	.2	.4	.6	.8
Entire Set	0.6496									

Excluded										
Col	a	-.8	-.6	-.4	-.2	0	.2	.4	.6	.8
Cat4 2										
Cat14 2										

Factors 1 (*purpose*) and 2 (*fear*) score above the ideal required Cronbach's alpha value of .7. Factors 3 (*vitality*) and 4 (*aggression*) are clusters that contain only two and three items respectively. Cronbach's alphas are sensitive to the number of items on a scale and the inter-item correlations should be considered and should range between 0.2 and 0.4. Only one of the inter-item *vitality* correlations fall within in this range while the other *vitality* item and the inter-item correlation for *aggression* fall above this range.

#### 4.2.3. Calculation of factor scores

To use EFA information in follow-up studies, the scores representing each individual's placement on the factors identified from the EFA are determined. Following the advice of Hair (1992, as cited by Flynn, n.d.), if the scale is "untested and exploratory, with little or no evidence of reliability or validity" (Flynn, n.d.), the summated scores

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should be constructed. The scores for each factor were calculated by taking the mean (average) of the individual items; for example, the score for *vitality* was calculated by adopting the mean of items 7, 8 and 12. Summated scores preserve the variation in the data, which can be an added benefit should they be used in further analysis.

### 4.3. Determining the relationship between health and purpose using Multiple Regression Analysis

This family of techniques is based on correlation, but allows for a more sophisticated exploration of the interrelationship among a set of variables. Multiple regression analysis allows one to predict someone's score on one variable on the basis of the scores on several other variables. According to Pallant (2007), this renders it "ideal for the investigation of more complex real-life research questions" (p 146). In this particular study, multiple regression analysis is used to explore a model of health by examining the relative contribution of each variable that could make up the model.

Three possible models were then explored using *purpose*, *fear* and *aggression* as dependent variables and *vitality* and seven *medical categories* as independent variables. The modelling attempt was purely exploratory using stepwise regression. Before building these models, it was important to first explore relationships and interrelationships. Three sets of correlations were explored: (1) correlations between *purpose*, *fear*, *vitality*, *aggression* and pseudoverves, (2) relationships between verve categories and mean scores for *purpose*, *fear*, *vitality* and *aggression*, and (3) relationships between verve categories and reporting a medical condition and medical categories.

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### 4.3.1. Correlations between purpose, fear, vitality, aggression and pseudoverves

Pseudoverve scores are related to questions regarding the degree of fulfilment experienced in the work and home environment. In Logotherapy, this would relate to creative values and perhaps experiential values. In the Triangles Model it is related to the level of “purposeful energy” a person experiences in these environments.

Correlation analysis indicates the strength and direction of the linear relationships between each pair of response variables. The researcher wished to explore the correlation of the pseudoverves with *purpose* scores, *fear* scores, *aggression* and *vitality* scores, because she expected the pseudoverves to correlate positively with *purpose* and *vitality* and negatively with *fear* and *aggression*.

Restricted maximum likelihood (REML) was used because estimates based on this technique are less biased than the usual maximum likelihood estimation method. The following matrix of correlation coefficients summarises the strength of the different relationships.

Table 8

#### *Multivariate Correlations*

Multivariate	Purpose score	Aggression score	Fear score	Vitality score	RedPseudoVerve	BluePseudoVerve
Purpose score	1.0000	-0.2095	-0.3883	0.4212	0.5337	0.3264
Aggression score	-0.2095	1.0000	0.4053	-0.3415	-0.1870	-0.2186
Fear score	-0.3883	0.4053	1.0000	-0.4545	-0.2699	-0.2651
Vitality score	0.4212	-0.3415	-0.4545	1.0000	0.3033	0.2304
RedPseudoVerve	0.5337	-0.1870	-0.2699	0.3033	1.0000	0.2432
BluePseudoVerve	0.3264	-0.2186	-0.2651	0.2304	0.2432	1.0000

There are 3 missing values.

The correlations are estimated by REML method.

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As evident in table 8, *purpose* indicates the strongest positive correlation with the work/task pseudoverve (Red Pseudoverve) and a medium strength correlation with *vitality* ( $r = .42$ ) and personal/interpersonal pseudo-verve (.32). *Vitality* indicates a medium correlation ( $r = .3$ ) with the work/task pseudo-verve and a weak or small correlation ( $r = .23$ ) with the personal/interpersonal pseudo-verve.

*Aggression* and *fear* correlate strongly with each other ( $r = .4$ ), but correlate negatively with *vitality*, *purpose* and both pseudoverves. *Fear* and *vitality* indicate the largest negative correlation ( $-.45$ ) followed by *fear* and *purpose* ( $-.38$ ).

Table 9

### Pairwise Correlations

Variable	by Variable	Correlation	Count	Lower 95%	Upper 95%	Signif Prob	Plot Corr
Aggression score	Purpose score	-0.2095	1405	-0.2590	-0.1590	<.0001*	
Fear score	Purpose score	-0.3883	1405	-0.4318	-0.3430	<.0001*	
Fear score	Aggression score	0.4053	1405	0.3606	0.4481	<.0001*	
Vitality score	Purpose score	0.4212	1405	0.3772	0.4633	<.0001*	
Vitality score	Aggression score	-0.3415	1405	-0.3869	-0.2945	<.0001*	
Vitality score	Fear score	-0.4545	1405	-0.4950	-0.4120	<.0001*	
RedPseudoVerve	Purpose score	0.5331	1402	0.4945	0.5695	<.0001*	
RedPseudoVerve	Aggression score	-0.1869	1402	-0.2370	-0.1359	<.0001*	
RedPseudoVerve	Fear score	-0.2689	1402	-0.3168	-0.2197	<.0001*	
RedPseudoVerve	Vitality score	0.3020	1402	0.2536	0.3488	<.0001*	
BluePseudoVerve	Purpose score	0.3258	1402	0.2782	0.3718	<.0001*	
BluePseudoVerve	Aggression score	-0.2186	1402	-0.2679	-0.1682	<.0001*	
BluePseudoVerve	Fear score	-0.2646	1402	-0.3126	-0.2152	<.0001*	
BluePseudoVerve	Vitality score	0.2296	1402	0.1794	0.2786	<.0001*	
BluePseudoVerve	RedPseudoVerve	0.2428	1402	0.1929	0.2914	<.0001*	

Pairwise correlations are presented in Table 9 and list the Pearson product-moment correlations for each pair of dependent (i.e. Y) variables. The said table also includes the significance probabilities and compares the correlations with a bar chart. The report above reveals that the correlations are statistically significant.

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### 4.3.2. Relationship between verve categories and mean scores for purpose, fear, vitality and aggression

In order to explain the level of one variable on the basis of the level of one or more other variables, mean purpose scores of the five verve categories were compared using analysis of variance (ANOVA) and tested for statistical significance. Three archetypes (Alpha, Bravo and Charlie) are primary archetypes, while two are secondary (Alpha/Bravo and Bravo/Charlie). A one-way between subjects ANOVA was conducted to indicate whether a relationship exists between the verve categories and the 4 factors exist.

#### 4.3.2.1. Purpose

The means and standard deviations in the output<sup>3</sup> indicated that the Charlie category ( $M = 2.22$ ) seldom or occasionally experiences *purpose*, while the other categories experience *purpose* occasionally or often (Bravo/Charlie,  $M = 2.8$ ; Bravo,  $M = 3.3$ ; Alpha/Bravo,  $M = 3.7$ ). Alpha experiences *purpose* most often ( $M = 3.9$ ). An  $F$ -test was conducted to determine whether the differences between the means are statistically significant. The level of *purpose* differed significantly between the archetypes.  $F(2) = 340.8, p < .01$ .

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<sup>3</sup> The results can be interpreted where 1 = never, 2 = seldom, 3 = occasionally and 4 = always.

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Table 10

*ANOVA for purpose with Verve categories*

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
VerveCategory	4	176.31210	44.0780	340.8649	<.0001*
Error	1397	180.64928	0.1293		
C. Total	1401	356.96138			

The p-value is smaller than .01 indicating that there is a significant difference between the mean *purpose* scores for the verve categories at a 95% level of confidence. Respondents falling in the Charlie archetype or category therefore experience less *purpose* than respondents of the other groups. Since the ANOVAS were employed to explore relationships and the data for *purpose* was not normally distributed, the use of a nonparametric test, namely the Wilcoxon Rank Sum test, was necessary; the results are presented in Table 11 below.

Table 11

Wilcoxon Rank Sum test for purpose

Level	Count	Score Sum	Expected Score	Score Mean	(Mean-Mean0)/Std0
Alpha	7	9097.00	4910.50	1299.57	3.932
Alpha/Bravo	192	219364	134688	1142.52	16.307
Bravo	762	605132	534543	794.14	9.383
Bravo/Charlie	399	146527	279899	367.24	-19.570
Charlie	42	3384.00	29463.0	80.57	-10.129

1-way Test, ChiSquare Approximation

ChiSquare	DF	Prob>ChiSq
658.5825	4	<.0001*

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The p-value from the Wilcoxon test is less than .01 ( $p < .0001$ ) indicating a significant difference between the mean ranks of the verve categories (at a 95% level of confidence), confirming that there is a significant difference between the mean *purpose* scores for the verve categories. This confirms that a significant relationship exists between the verve categories and *purpose*.

**4.3.2.2. Fear**

The means and standard deviations in the statistical report<sup>4</sup> indicate that the Charlie category ( $M = 3.51$ ) occasionally or always experiences feeling *fearful*, while the other categories seldom or never experience *fearfulness* (Bravo/Charlie,  $M = 2.8$ ; Bravo,  $M = 2.3$ ; Alpha/Bravo,  $M = 1.8$ ). Alpha experiences *fear* least often (1.2). An *F*-test was conducted to determine whether the differences between the means are statistically significant. The level of *fear* differed significantly between the archetypes,  $F(4) = 57.4, p < .01$ .

Table 12

*ANOVA for fear with Verve categories*

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
VerveCategory	4	229.98402	57.4960	299.0044	<.0001*
Error	1397	268.63122	0.1923		
C. Total	1401	498.61524			

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<sup>4</sup> The results can be interpreted where 1 = never, 2 = seldom, 3 = occasionally and 4 = always.



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The data for *fear* was normally distributed and therefore did not necessitate further nonparametric tests. This confirms that a significant relationship exists between the verve categories and *fear*. Respondents falling in the Charlie archetype or category experience more *fearfulness* than the respondents of the other groups.

### 4.3.2.3. *Vitality*

The means and standard deviations in the statistical report<sup>5</sup> indicate that the Charlie category ( $M = 1.43$ ) seldom or never experiences *vitality*, while the other categories experience *vitality* occasionally or always (Bravo/Charlie,  $M = 1.9$ ; Bravo,  $M = 2.6$ ; Alpha/Bravo,  $M = 3.0$ ). Alpha experiences *vitality* most often ( $M = 3.57$ ). The level of *vitality* differed significantly between the archetypes,  $F(4) = 238, p < .01$ .

Table 13

*ANOVA for vitality with Verve categories*

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
VerveCategory	4	228.10244	57.0256	238.0291	<.0001*
Error	1397	334.68500	0.2396		
C. Total	1401	562.78745			

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<sup>5</sup> The answer options for experiencing purpose are as follows: often, occasionally, seldom and never.

The results can be interpreted where 1 = never, 2 = seldom, 3 = occasionally and 4 = always.

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Respondents falling in the Charlie archetype or category therefore experience less *vitality* than the respondents of the other groups. The data for *vitality* was normally distributed and therefore did not necessitate further nonparametric tests. This confirms that a significant relationship exists between the verve categories and *vitality*. Therefore, respondents falling into the Charlie archetype or category, experience less *vitality* than the respondents of the other groups.

### **4.3.2.4. Aggression**

The means and standard deviations in the statistical report<sup>6</sup> indicate that the Charlie category ( $M = 3.29$ ) occasionally or always experiences *aggression*, while the other categories experience *aggression* seldom or never (Bravo/Charlie,  $M = 2.8$ ; Bravo,  $M = 2.5$ ; Alpha/Bravo,  $M = 2.2$ ). Alpha experiences or behaves with *aggression* the least often ( $M = 1.21$ ). An *F*-test was conducted to determine whether the difference between the means are statistically significant. The level of *aggression* differed significantly between the archetypes,  $F(4) = 61.5, p < .01$ .

---

<sup>6</sup> The answer options for experiencing purpose are as follows: often, occasionally, seldom and never.

The results can be interpreted where 1 = never, 2 = seldom, 3 = occasionally and 4 = always.

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Table 14

*ANOVA for aggression with Verve categories*

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
VerveCategory	4	89.77628	22.4441	61.5302	<.0001*
Error	1397	509.57697	0.3648		
C. Total	1401	599.35325			

Respondents falling into the Charlie archetype or category therefore experience more *aggression* than the respondents of the other groups. The data for *aggression* was normally distributed and therefore did not necessitate further nonparametric tests. This confirms that a significant relationship exists between the verve categories and *aggression*. Therefore, the respondents who fall into the Charlie archetype or category experience more *aggression* than the respondents of the other groups.

#### 4.3.3. Relationship between verve categories and reporting a medical condition and medical categories

Previous exploration revealed that higher levels of *purpose* are associated with the Alpha archetype while the Charlie archetypes score the lowest with regards to *purpose*. Given these outcomes and that more *purpose* is postulated to be indicative of better health, and vice versa, it would be expected that the Alpha archetype would report fewer medical conditions than the Charlie archetype.

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## Reporting a medical condition

To test for association between the verve categories and reporting a medical condition, a Chi-Square test was used. The results of this analysis are presented in Table 15 below.

Table 15

*Contingence table: Medical by Verve category*

No	Alpha	Alpha/Bravo	Bravo	Bravo/Charlie	Charlie	
Count	4	127	452	206	19	808
Total %	0.35	11.25	40.04	18.25	1.68	71.57
Col %	100.00	80.38	72.90	64.78	65.52	
Row %	0.50	15.72	55.94	25.50	2.35	
Yes						
Count	0	31	168	112	10	321
Total %	0.00	2.75	14.88	9.92	0.89	28.43
Col %	0.00	19.62	27.10	35.22	34.48	
Row %	0.00	9.66	52.34	34.89	3.12	
	4	158	620	318	29	1129
	0.35	13.99	54.92	28.17	2.57	

The proportion of respondents with a medical condition is much less for the Alpha group (0%) than the Charlie group (34.4%) (Table 16). To determine whether the association between the verve category and reporting a medical condition is statistically significant, a Chi-Square test was conducted.

Table 16

*Test for significance*

N	DF	-LogLike	RSquare (U)
1129	4	8.5613188	0.0071
Test	ChiSquare	Prob>ChiSq	
Likelihood Ratio	17.123	0.0018*	

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	N	DF	-LogLike	RSquare (U)
Pearson			15.884	0.0032*

This p-value (Table 16) is .0018, which is smaller than the level of significance adopted, namely .01. Hence the results indicate that a significant association exists between the verve categories and medical condition at a 99% level of confidence.

#### 4.3.3.1. *Medical condition categories and purpose*

It has been postulated that higher levels of *purpose* are associated with the Alpha archetype and it was established that they report fewer medical conditions than archetypes with lower *purpose* scores. The researcher wanted to explore the relationship, if any, between certain types of medical conditions and level of *purpose*. In order to facilitate statistical analysis, self-reported medical conditions were classified into neurological ( $N = 17$ ), psychiatric ( $N = 10$ ), cardio vascular ( $N = 87$ ), tumours ( $N = 12$ ), thyroid conditions ( $N = 13$ ), sleep disturbances ( $N = 3$ ) and inflammatory conditions ( $N = 48$ ). ANOVA was then used to ascertain the association between *purpose* and the seven medical categories. The results indicated that respondents with:

- Cardiovascular conditions, inflammatory conditions, tumours and thyroid conditions reported never/ seldom feeling *purpose*, while seldom/occasionally feeling *aggression, fear* and *vitality*;
- Sleep disturbances also reported never/ seldom feeling *purpose*, while seldom/ occasionally feeling *aggression* or *fear*, and seldom experiencing

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*vitality* (less vitality than others, perhaps understandably due to lack of sleep).

- Neurological conditions reported seldom feeling *purpose* (more purpose than others) and *vitality* (less than those with cardiovascular, inflammatory, and thyroid conditions, and tumours, but more often than sleep deprived respondents), while seldom/ occasionally feeling *aggression* and *fear*;
- Psychiatric conditions indicated seldom/ occasionally feeling *purpose* (highest purpose refers to a comparison with other categories), while occasionally/ often feeling *aggression*, *fear* and *vitality* (more so than other categories).

The significance of these associations were tested and significant relationships were found between *purpose* and medical conditions ( $F(6) = 2.37, p < .0313^*$ ), *fear* and medical conditions ( $F(6) = 2.52, p < .0224^*$ ), *vitality* and medical conditions ( $F(6) = 2.29, p < .0367^*$ ), but not between *aggression* and medical conditions ( $F(6) = 1.78, p < .1045$ ).

### 4.3.4. Exploring three models using stepwise regression

Stepwise regression is a type of multiple regression in which the choice of predictive or independent variables (vitality and medical conditions in this case) is carried out by an automatic procedure. At each stage in the process, after a new variable is added, a test is made to check whether certain variables can be deleted based on certain criteria. The procedure terminates when the measure is (locally) maximised, or when the available improvement falls below a certain critical value. Stepwise regression is suitable in the

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exploratory phase of research because it allows one to develop an optimal equation for predicting a dependent variable from several independent variables. The goal of stepwise regression is to discover relationships. Stepwise regression, used properly, is especially useful for sifting through large numbers of potential independent variables (Decision 411 Forecasting, n.d.).

For Stepwise regression, there should be a ratio of 40 cases for every independent variable. The independent variables are *vitality* and seven categories of medical conditions (*neurological, thyroid, psychiatric, tumours, cardiovascular conditions, inflammatory and sleep disturbances*). This method should ensure that the result will include the smallest possible set of predictor variables (*Vitality* and seven medical categories) included in the model.

*Purpose, fear and aggression* were then selected as the dependent or “target” variables and used separately to determine how they would contribute to *vitality* and the *medical categories*. The question explored is: Can people with higher *purpose* be depicted as having high *vitality* and few or no medical conditions?

### **4.3.4.1. Purpose**

The Adjusted *R* Square (Table 17) value gives the percentage of variance of *purpose*. Note that the Adjusted *R* Square value is reported here (and in the analyses below), because it gives a better indication, than the *R* Squared value, of the amount of variance in the outcome that the model accounts for in the population, instead of just in the sample

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(Field, 2005, pp. 171–172). The Adjusted  $R$  Square value is .176, which indicates that *vitality* only accounts for 17% of the variance in *purpose* and is therefore a weak fit.

Table 17

*R Squared for purpose*

Response	Score
RSquare	0.177398
RSquare Adj	0.176812
Root Mean Square Error	0.458667
Mean of Response	3.268937
Observations (or Sum Wgts)	1405

The ANOVA table (Table 18) assesses and reports the overall significance of this model. As  $p < .01$  the fit of this model is significant. *Vitality* therefore is significant predictor of *purpose*.

Table 18

*ANOVA for purpose*

Response	Score
RSquare	0.177398
RSquare Adj	0.176812
Root Mean Square Error	0.458667
Mean of Response	3.268937
Observations (or Sum Wgts)	1405

Table 19

*Parameter estimates and effect tests for purpose*

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	2.4413037	0.049129	49.69	<.0001*
Vitality score	0.3357532	0.019302	17.39	<.0001*



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## Effect Tests

Source	Nparm	DF	Sum of Squares	F Ratio	Prob > F
Vitality score	1	1	63.652067	302.5643	<.0001*

The next question addressed is whether there is sufficient information using the variables in the current model or whether additional variables are required. The lack of fit test, sometimes called a “Goodness of Fit” test, provides this information (Table 20). In this example, the lack of fit Chi-square is significant ( $Prob > ChiSq = .01$ ) and supports the conclusion that introducing additional variables should be considered, despite the significant relationship between *purpose* and *vitality*.

Table 20

## Lack of fit (purpose)

Source	DF	Sum of Squares	Mean Square	F Ratio
Lack Of Fit	8	6.78001	0.847501	4.0997
Pure Error	1395	288.37655	0.206722	Prob > F
Total Error	1403	295.15656		<.0001*
				Max RSq
				0.1963

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**4.3.4.2. Fear**

The Adjusted *R* Square value is .21, which indicates that the *fear* model accounts for the highest variance in the criterion variable (*vitality*) at 21%. The ANOVA table reports or assesses the overall significance of this model. As  $p < .01$ , this model is significant.

Table 21

*Adjusted R squared for fear*

Source	DF	Sum of Squares	Mean Square	F Ratio
Lack Of Fit	8	6.78001	0.847501	4.0997
Pure Error	1395	288.37655	0.206722	Prob > F
Total Error	1403	295.15656		<.0001*
				Max RSq
				0.1963

Table 22

*ANOVA for fear*

Source	DF	Sum of Squares	Mean Square	F Ratio
Lack Of Fit	8	6.78001	0.847501	4.0997
Pure Error	1395	288.37655	0.206722	Prob > F
Total Error	1403	295.15656		<.0001*
				Max RSq
				0.1963

The lack of fit Chi-square is not significant ( $Prob > ChiSq = .33$ ) and supports the conclusion that it is not necessary to consider introducing additional variables.

Table 23

*Effect of fear*

Source	DF	Sum of Squares	Mean Square	F Ratio
Lack Of Fit	8	6.78001	0.847501	4.0997
Pure Error	1395	288.37655	0.206722	Prob > F

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Source	DF	Sum of Squares	Mean Square	F Ratio
Total Error	1403	295.15656		<.0001*
				Max RSq
				0.1963

Neurological, inflammatory and psychiatric conditions are significant predictors in this model ( $p = .0154$ ); however, *vitality* is the most significant predictor of this model ( $p < .0001$ ).

#### 4.3.4.3. Aggression

The Adjusted *R* Square value is .14, which indicates that this model (*aggression*) only accounts for 14% of the variance in the criterion variable (*vitality*). The ANOVA table reports or assesses the overall significance of this model. As  $p < .01$  this model is significant.

Table 24

*Adjusted R squared for aggression*

Source	DF	Sum of Squares	Mean Square	F Ratio
Lack Of Fit	8	6.78001	0.847501	4.0997
Pure Error	1395	288.37655	0.206722	Prob > F
Total Error	1403	295.15656		<.0001*
				Max RSq
				0.1963

Table 25

*ANOVA for aggression*

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	13.020466	4.34016	11.3858

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Source	DF	Sum of Squares	Mean Square	F Ratio
Error	183	69.757609	0.38119	<b>Prob &gt; F</b>
C. Total	186	82.778075		<.0001*

The lack of fit Chi-square is not significant ( $Prob > ChiSq = .23$ ), which supports the conclusion that it is not necessary to consider introducing additional variables.

Table 26

*Effect tests for aggression*

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	13.020466	4.34016	11.3858
Error	183	69.757609	0.38119	<b>Prob &gt; F</b>
C. Total	186	82.778075		<.0001*

*Neurological, thyroid, cardiovascular, inflammatory, tumour, inflammatory and psychiatric* conditions are significant predictors in this model ( $p = 0.0160$ ); however, *vitality* is the most significant predictor of this model ( $p < .0001$ ).

#### 4.4. Summary of results

Although the final factor analysis differs from previously assumed factors it was established that *purpose* was a common and reliable factor and therefore still fell in line with the research aims and objectives. Other factors, such as *fear*, also met with required

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reliability measures; however, *vitality* and *aggression* indicated lower reliability, possibly because they are clusters of only two and three items respectively.

Relationship of factors to the verve categories, pseudoverves, reported medical conditions and medical categories

*Purpose* shows the strongest positive correlation with work/task pseudoverve and a medium strength correlation with vitality ( $r = .42$ ) and personal/interpersonal pseudo-verve ( $r = .32$ ). *Aggression* and *fear* correlate strongly with each other ( $r = .4$ ), but correlate negatively with *vitality*, *purpose*, work pseudoverve and personal/interpersonal pseudoverve. *Fear* and *vitality* indicate the largest negative correlation ( $r = .45$ ) followed by *fear* and *purpose* ( $r = .38$ ).

In the TM©, the Alpha archetype is associated with the highest level of purpose, while the Charlie archetype is associated with the lowest levels of purpose. The analysis of variance analysis (ANOVA) established that there is a significant difference between the mean *purpose* scores of the Verve categories and confirmed that Alpha had the highest mean scores for *purpose* and the lowest for *fear* while Charlie reported the exact opposite. A significant association exists between the verve categories and the reporting of a medical condition.

When exploring the relationship between *purpose* and medical categories, respondents with cardiovascular conditions, inflammatory conditions, tumours, sleep disturbances and thyroid conditions reported never/ seldom feeling purposeful, respondents with neurological conditions reported seldom feeling purpose (more purpose than others)

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and respondents psychiatric conditions indicated seldom/ occasionally feeling *purpose* (highest purpose means in comparison to other categories).

The significance of these associations was tested and significant relationships were found between *purpose* and medical conditions, *fear* and medical conditions *vitality* and medical conditions, but not between *aggression* and medical conditions.

### 4.4.1. Exploring Models

*Vitality* accounted for 17% of the variance in *purpose* and was a significant but weak fit. Despite the significant relationship between *purpose* and *vitality*, the lack of fit Chi-square was significant and supports the conclusion that introducing additional variables into the model should be considered.

*Fear* accounted for the highest variance (21%) in the criterion variable (*vitality*). Since *fear* was significant, it was not necessary to explore additional models. Neurological, inflammatory and psychiatric conditions were significant predictors of *fear*.

*Aggression* accounted for 14% of the variance in the criterion variable (*vitality*) and therefore the weakest fit. It was not necessary to explore additional models because *aggression* showed a significant result. Neurological, thyroid, cardiovascular, inflammatory, tumour, inflammatory and psychiatric conditions were significant predictors of *aggression*.

*Vitality* was the most significant predictor of each of the models (*purpose*, *fear* and *aggression*); however, in the purpose model, there was a lack of fit.

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## Chapter 5: Discussion and Conclusion

The overall goal of this dissertation was to examine the role of meaning within the framework of Logotherapy and PNI as the cornerstones of health, using secondary data collected from the responses to the TMA-o.

### 5.1 Discussion

**To examine this role of meaning, objectives were set as follows:** (1) investigate of TMA-o to determine its level of reliability for this study, (2) explore the relationship of purpose (having meaning or living meaningfully) with pseudoverves, the verve categories, reported medical conditions, medical categories and, finally, (3) to examine the role of vitality and the presence of self reported medical conditions using secondary data from the TMA-o

#### 5.1.1. Investigating and confirming factors

The TMA-o has previously only tested for construct validity, but not content or criterion validity. The researcher had to be certain that purpose was a confirmed and reliable factor for further exploration of the objectives and aims. The initial factors proposed by the TM© were purpose, hopelessness and fear. Cronbach's alphas revealed good reliability for item clusters for purpose (.84) and fear (.78), but not for hopeless (.69).

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Preliminary exploratory factor analysis of the 30 items from the verve category section, however, revealed 7 factors. Seventeen items with factor loadings above .3 were selected and factor analysed using principal component analysis. Factor rotation revealed four factors that were then labelled as follows: *purpose*, *fear*, *vitality* and *aggression*. Of these factors *purpose* and *fear* were similar to the previous factors suggested by the TM©. *Aggression* was also aligned; however, the concept of subjective *vitality*, which was previously more implicitly referred to or inferred by in the TM©, is now clustered, as mentioned above, as a factor. The most important of the factors, *purpose*, is the main focus of this study.

Subsequent and final factor clusters (*purpose*, *fear*, *vitality* and *aggression*) were then measured for reliability and internal consistency using Cronbach's alpha as a coefficient of reliability. The seven items for *purpose* (.84) and five for *fear* (.73) indicated the highest reliability. *Vitality* and *aggression* consisted of three and two items respectively and both factors revealed less satisfactory Cronbach's alphas of .65 and .64. The latter could be due to the factors being constructed of very few items or that the underlying construct is not sufficiently measured by the items. When exploring correlations, it became evident that the low reliability coefficient for *aggression* was likely due to the small number of items making up the factor cluster, while the underlying construct of *vitality* may not be sufficiently represented by the items comprising the cluster.



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### 5.1.2. Exploring correlations

#### 5.1.2.1. *Purpose and pseudoverves*

Multiple correlation indicated a significant positive correlation between *purpose* and the pseudoverve representing work or task orientation. This indicates that feeling *purpose* is correlated with having “purposeful energy” and fulfillment in the working environment, which in turn points to the creative values in Logotherapeutic terms.

Interestingly, when correlating *purpose* with the pseudoverve relating to personal and/or interpersonal relationships, a medium but significant correlation was found. Personal and interpersonal relationships point to the experiential values in Logotherapy. This seems to suggest that ‘what I do’ or ‘how I express myself through my tasks, my work or my career’, that is, creative values, is more strongly associated with feeling *purpose* than ‘who I relate to’ or ‘how I relate’ or ‘my relationships’.

This is a surprising outcome and could be attributed to the majority of questionnaires being completed in a work-related environment and that it therefore could be easier to associate answers about *purpose* with work, or, this outcome might indicate that task orientation is easier to relate to purposeful activity. It may indicate that people invest or experience more *purpose* through their task orientation (which can include, but is not exclusively, about work or career) as opposed to their relationships. Personal and interpersonal relationships point to experiential values in Logotherapy. Alternatively it may be less evident that *purpose* can be derived

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from relationships, or in terms of experiential values in Logotherapy, loving another person or being loved by them.

Because the pseudoverve scores represent purposeful energy, relationships with other variables were also explored. Although *vitality* and *purpose* were significantly and strongly correlated, *vitality* indicated a weaker, but still significant, correlation with both work pseudoverve scores and personal / interpersonal pseudoverve scores. The strong correlation between *purpose* and *vitality* was expected; however, the weaker correlation with the pseudoverves may be indicative of the difference between the energy or drive (Frankl, 2000; Graber, 2004), rather than energy or *vitality* resulting from *purpose*, strive or the sense of “ought to be” (Frankl, 2000, p. 41). It points to the possibility that subjective *vitality* does not, therefore, refer to just any energy (Ryan & Frederick, 1997), but rather to energy generated by feeling purposeful. The construct *vitality*, in this dissertation does not distinguish between the sources of the energy, but rather, relates to the level or degree of energy and frequency of ailments. *Vitality*, as a factor, should therefore be re-examined and perhaps amended in the light of previous research by Ryan & Frederick (1997).

*Fear* and *aggression* were inversely correlated to *purpose*, *vitality*, the work pseudoverve and the personal/interpersonal pseudoverve, indicating that *fear* and *aggression* decrease *vitality*. *Fear* and *vitality* exhibited the largest negative correlation followed by *fear* and *purpose*. It could also indicate that it may be more challenging to feel purposeful, when experiencing *purpose*, *fear* and *aggression*. Most importantly, it suggests that feeling *purposeful* increases *vitality* and decreases *fear* and *aggression*, supporting

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other research, which has shown that meaning improves mental health (Everson et al. 1996; Kiecolt-Glaser, McGuire & Robles, 2002; Niaura et al. 2002).

### **5.1.2.2. Purpose, aggression, fear, vitality and Verve categories.**

The highest mean scores for *purpose* and *vitality* were reported by the Alpha archetype indicating high levels of *purpose* and *vitality*. Alpha archetypes also reported the lowest mean scores for *fear* and *aggression*, showing the least *fear* and *aggression* of all the archetypes. In contrast, the Charlie archetype reported the highest mean score for *fear* and *aggression* and the lowest mean scores for feeling *vitality* and *purpose*. Alpha/Bravo, Bravo and Bravo/Charlie reported decreasing levels of *purpose* and *vitality* and increasing levels of *fear* and *aggression*, respectively. There was a statistically significant difference between the mean scores for the verve categories.

These results corroborate the basic principles underlying the TM© and confirms the verve categories in terms of the factors. More intriguingly it suggests that the intricate ratios of *purpose*, *vitality*, *fear* and *aggression* are perhaps more indicative of the complexities found in human behaviour.

### **5.1.2.3. Purpose, verve categories and reported medical conditions**

Prior to this, it was shown that Alpha reports significantly higher *purpose* than Charlie, who reports the lowest level of *purpose*. It is possible that the cumulative effect of the adrenal responses related to *fear*, the immune suppressing effect of *aggression* on the immune system as posited by PNI research, in combination with feelings of

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*purposelessness*, could make the Charlie archetype more vulnerable to ill health. The data obtained in this study revealed (see section 4.3.3 in Chapter 4) that the proportion of respondents who reported a medical condition was, in fact, significantly greater for the Charlie group and smaller for the Alpha group.

### 5.1.2.4. *Medical categories and purpose*

Subsequently, the researcher examined the relationship of factors with specific medical categories using ANOVA. The results indicated that the respondents reporting medical conditions in the categories cardiovascular conditions, inflammatory conditions, tumours, sleep disturbances and thyroid conditions also reported never / seldom feeling *purposeful*. Neurological conditions reported slightly more *purpose* relative to the previous conditions, while psychiatric conditions indicated, in relative terms, the highest means (seldom rather than never/seldom) for *purpose* when compared to other categories.

It was interesting to note that respondents reporting psychiatric conditions also reported more *aggression*, *fear* and *vitality* than the other medical categories. The latter (*vitality*) may be associated with the difference noticed in the ‘drive’ energy as opposed to the ‘strive’ energy mentioned earlier when discussing the pseudoverve results, that is, *vitality* without *purpose* may result from a more external locus of control, ‘drive’ or ‘manic’ energy that drives a person rather than the *purposeful* energy that emanates from an internal locus of control as reported by Ryan and Frederick(1997) and Graber (2004). These results may indicate that the ratios and interplay between the reported mean scores of the factors, rather than only one or the other factor, are worth investigating individually.

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Finally, when testing for the significance of the other factors and their associations, more perplexing results were found. Significant associations were found between each of the factors and the medical categories, with the exception of *aggression*. *Aggression* and *fear* previously correlated, as expected, negatively with *vitality*, *purpose* and both pseudoverves, making the lack of significance an unexpected finding, even more so as recent experiments have confirmed that anger can have a substantial detrimental effect on the immune system, which in turn can increase risks associated with infectious disease, cancer, wound healing, autoimmune disease, HIV progression, type 2 diabetes, and even Alzheimer's disease (Alexander & Benjamin, 2011; Perini, Muller & Buhler, 1991; Smith, 2004; Suarez, Lewis & Kuhn, 2003). This lack of a significant association between *aggression* and the medical categories was also not confirmed in the subsequent model testing and would warrant further investigation.

### 5.1.3. Exploring models

The process underlying stepwise regression is purely inductive, seeking a useful statistical model without any regard to theory. *Purpose*, *fear* and *aggression* were subsequently selected as the dependent or "target" variables and used separately to determine how they would be influenced by the independent variables, *vitality* and *medical categories*. The question that was explored is: Can people with higher *purpose* be depicted as having high *vitality* and few or no medical conditions?

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The result indicates that *vitality* is a significant but weak predictor in the *purpose* model. None of the medical categories were included in the result, indicating that medical conditions are not, as evident in the other results, apparent in people with high *purpose* scores. The model, however, exhibits a significant lack of fit, indicating that other variables should be introduced. This was not altogether surprising as previous results indicated that although *vitality* (in terms of level of energy) is associated with *purpose*, *vitality* in this study does not distinguish the source (external or internal locus of control) or quality of that *vitality*, but only the level or degree. This adds to the argument that the construct of *vitality* as it is used in this dissertation should be re-examined and revised. It does, however, allude indirectly to the Logotherapeutic approach that in order to discover, experience and increase *purpose*, it cannot be derived from an external source. For *vitality* to be successfully associated with self-esteem, self actualisation, self-determination, mental health, self-motivation, and perhaps purposefulness, it should refer specifically to energy that is perceived to originate from the self, that is, it has an *internal perceived locus of causality* (Deci & Ryan, 1985, as cited in Frederick & Ryan, 1997).

When exploring the role of vitality and medical categories in the fear model, the model displays the highest (21%) adjusted r-square of the three models. Neurological, inflammatory and psychiatric conditions are significant predictors in the fear model while vitality is the most significant predictor of this model. Despite this, it still leaves much of the variance unaccounted for, possibly for the same reasons furnished above.

When using vitality to predict the model for aggression, it exhibits the lowest r-square (.14), leaving the largest amount of variance unaccounted for (86%). Although

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neurological, thyroid, cardiovascular, inflammatory, tumour, inflammatory, psychiatric conditions are significant predictors in the aggression model, vitality is the most significant predictor of this model. In this instance, the variance could have occurred as a result of the weakness of the underlying construct *aggression* (see).

*Vitality* was the most statistically significant predictor in each of the explored models. Although each model is significant, the *purpose* model exhibits a lack of fit, indicating that the relationship between *vitality* and *purpose* could be influenced by other variables. It has also been mentioned that the variable *vitality* should be revisited and that the possibility exists that a more careful examination of the relative ratios between the variables should be considered.

### 5.2. Shortcomings, limitations and sources of error

The first limitation is that the researcher relied on secondary data from which generalisations cannot be made.

Furthermore, the TMA-o consists of a self-report questionnaire. Self-report questionnaires are subjective and will not necessarily reflect objectivity of the environment or context. This could be considered a limitation, but may possibly be mitigated when considering that the manner in which individuals perceive and feel about their environment and about themselves, has an effect on the immune system (Pert, 1997).

TMA-o is not a fully validated instrument and is a self-report questionnaire. As a result, there are certain limitations and the data are prone to certain sources of error. To

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overcome the limitation of the TMA-o not being validated, the researcher, after examining all four independent sections of the questionnaire, limited the study to the second (verve category) and the third sections (Framingham Index) thereof. The Framingham Index is a well-known and thoroughly validated questionnaire. The section relating to the verve category lent itself to reliability testing and contained the crux of the TMA-o classification process. The reports for each section are produced independently of each other, except for section 4 (corporate profile), thus rendering it possible to consider only the data relating to the verve categories and the Framingham Index. Section four was totally excluded from this study. Two questions from section one were used, because, according to the TM©, they relate to purposeful energy.

In addition, data in the Framingham Index, where there are ‘correct’ and ‘incorrect’ answers, are another possible source of error. Typical errors are found when height, weight or girth are reported in a different measure than requested. In some instances, individuals appear to have fabricated some of their scores, resulting in very unlikely measurements, which are then evident in the automatically generated BMI scores. BMI is a function of height and weight. This is where the majority of outliers were found and removed.

A further shortcoming is that when reporting medical conditions, the entire sample did not answer all the medical questions.

With regard to the results, the newly clustered factor, *vitality*, may not be constructed well enough to capture the more nuanced aspects of subjective vitality as found in previous research. *Aggression* and *fear* correlate strongly with each other, perhaps confounding the



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two factors. It is also possible that both emotions could be present at the same time, for example, when a person reacts aggressively in a fear-inducing situation.

### 5.3 Conclusion

An accepted way to quantify meaning is to measure purpose in life (Battista & Almond, 1973, as cited in Mascaro and Rosen, 2008; Crumbaugh & Maholick, 1964; Hutzell, 1986; Makola & Van den Berg, 2008; Ryff, 1989). Purpose plays a key role in the attainment and sustainment of mental, emotional and physical health (Everson, et al., 1996; Lukas, 2000; Melton & Schulenberg, 2008; Schulenberg, 2004). The researcher set out to explore the relationship between purpose and health using the principles of Logotherapy and PNI. These principles were represented in TMA-o, thereby affording the researcher with a unique opportunity to explore the relationship between *purpose*, *vitality* and compromised physical health (medical conditions).

People reporting high levels of *purpose* together with low levels of fear and aggression, can be characterised by high vitality and an absence of medical conditions. When categorised by the TMA-o they are likely to fall into the Alpha or Alpha/Bravo category and display high scores on the pseudoverve that reports fulfilment through task orientation or work, supporting the creative values offered in Logotherapy.

Conversely, the category that presents with the lowest *purpose* scores, Charlie, also report the lowest *vitality* and the highest incidence of medical conditions. This category also reports the highest scores for *fear* and *aggression*.

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*Fear* is also associated with low *vitality*, but more interestingly, it is associated with reports of neurological conditions, psychiatric conditions and inflammatory conditions. PNI research has previously explained the association between fear (as a stress response) and inflammation (Weinberg, 2009). When explored via the four factors, participants suffering from psychiatric conditions reported seldom experiencing *purpose* together with high levels of *fear*, *aggression* and *vitality*.

This finding, together with the weak correlation between *vitality* and pseudoverves, bring the construct of *vitality* under question. The items that make up this construct only include level of energy and frequency of ailments. The subtleties of *vitality*, as it relates to energy brought on from external sources, pressures or stress or as an experience that is “perceived to emanate from the self” (Ryan & Frederick, 1997, p. 535), is not explored. From a Logotherapy perspective, the experience of discovering *purpose* is unique to each individual and can only emanate from within (Shantall, 2003). Reviewing *vitality* with this in mind and following it up with further research could be beneficial.

The significant association between *vitality*, as an independent variable may therefore not be sufficient, effective or conclusive as a predictor of the dependent variables *purpose*, *fear* and *aggression*. This may explain the lack of fit in the model for *purpose* as well as the amount variance that could not be accounted for by the models. Medical conditions, however, were only present in the models for *fear* and *aggression* with *fear* being the strongest predictor for three of the medical categories.

The ability to discover and inhabit meaning lies in the noetic dimension of every human being. Although people can ultimately be defined by this dimension only, it cannot

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be separated from any of the other human dimensions, the psyche or the soma (Graber, 2004; Lukas, 2000). These dimensions affect each other, as would all the components of a complex system. Based on dimensional ontology and the overall effects of meaning on health, it is evident that Logotherapy would greatly enhance other therapies, whether physical or psychological. In fact, Frankl proposed Logotherapy as a supplement to psychotherapy (Frankl, 1986).

Future research should be aimed at measuring logotherapeutic interventions with the express purpose of understanding the impact of purpose on the immune system, perhaps similar to that of Suarez, Lewis, & Kuhn (2003). This dissertation is the first exploration in an attempt to become familiar with such relationships by using the TMA-o. The instrument should be further investigated and revised with the aim of rendering it a validated instrument as it could play an integral role in understanding the complex interplay between the mind and the body and the role of purpose in that interplay.

The results of this study lend some support to the notion that the will to meaning and therefore the ability to live life meaningfully is inherent in each person. Purpose, as a measure of this meaning, has to be elicited and acted upon in every life situation in order to reap the positive benefits, psychologically, physically, socially and otherwise. An illustration of this is found in an extract from the speech delivered by Archbishop Emeritus and Nobel Prize Laureate, Desmond Tutu, at the 61<sup>st</sup> WHO assembly (2008):

We had a meeting with the internally displaced people and staggeringly they could laugh – what an amazing example of the resilience of the human spirit in the face of daunting conditions. The Muslim men wore white costumes – and they were spotless. It all

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testified to the wonder of the human spirit, the capacity to laugh, to cling to dignity and self respect, to refuse to see oneself as a victim, or to be pitied as one (para 11).

This quote is a reminder that the principles of Logotherapy were lived, tested and implemented in the harsh conditions of the Nazi concentration camps and therefore could play a central role in other extreme and traumatic life situations as well. Frankl demonstrated that even under the extreme conditions, life is meaningful and a level of health can be achieved and maintained. From a health perspective, among immigrants and refugees, illness often occurs as a result of the experience of emigration, especially for refugees (Brannon & Feist, 2009; Furukawa, 1997; Lantz, 2001; Ritsner & Ponizovsky, 2003, as cited in Kemp & Rasbridge, 2004).

Frankl's views in the Will to Meaning as representative of the spiritual dimension and the human spirit, and if it has such far reaching health implications, should be included as a spiritual component of health in the definition of health.

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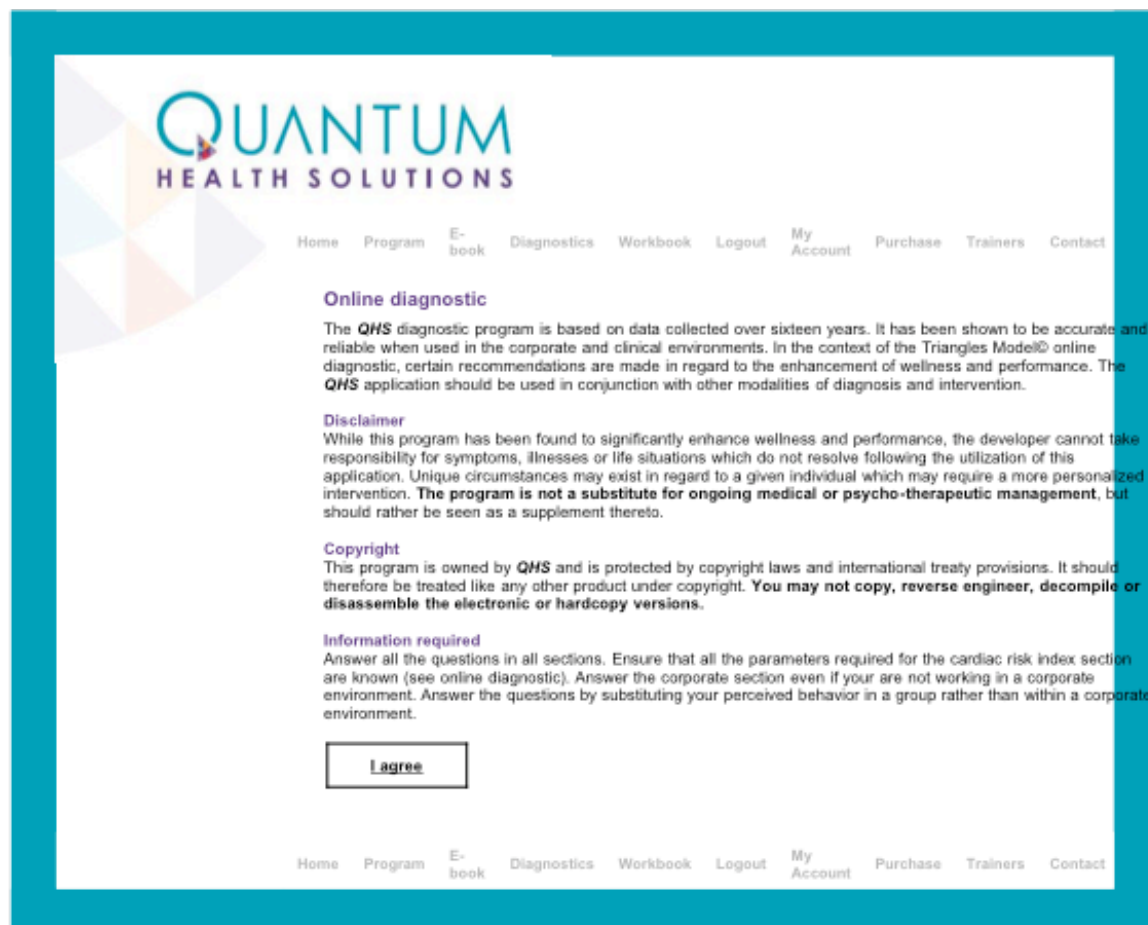
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## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

## Appendix A

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### Online diagnostic

The **QHS** diagnostic program is based on data collected over sixteen years. It has been shown to be accurate and reliable when used in the corporate and clinical environments. In the context of the Triangles Model<sup>®</sup> online diagnostic, certain recommendations are made in regard to the enhancement of wellness and performance. The **QHS** application should be used in conjunction with other modalities of diagnosis and intervention.

### Disclaimer

While this program has been found to significantly enhance wellness and performance, the developer cannot take responsibility for symptoms, illnesses or life situations which do not resolve following the utilization of this application. Unique circumstances may exist in regard to a given individual which may require a more personalized intervention. **The program is not a substitute for ongoing medical or psycho-therapeutic management**, but should rather be seen as a supplement thereto.

### Copyright

This program is owned by **QHS** and is protected by copyright laws and international treaty provisions. It should therefore be treated like any other product under copyright. **You may not copy, reverse engineer, decompile or disassemble the electronic or hardcopy versions.**

### Information required

Answer all the questions in all sections. Ensure that all the parameters required for the cardiac risk index section are known (see online diagnostic). Answer the corporate section even if you are not working in a corporate environment. Answer the questions by substituting your perceived behavior in a group rather than within a corporate environment.

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## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH



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**Diagnostics: Verve Configuration**

**Question A1**  
**How many hours on average do you spend at work on any given day?**

Add the total amount of hours per week spent at work and divide by the amount of days in the week that you work. Work refers to activities required to:  
 Earn a living  
 Further your career  
 Run the home

1-4 hours     5-8 hours     9-12 hours     13-16 hours

**Question A2**  
**Within your work environment, how many different applications can you identify?**

Different applications refer to one or more of the following:  
 More than one company interest  
 Multiple roles within the company - for example, administration and marketing or managerial and consulting  
 Work and study

1     2     3     4 or more

**Question A3**  
**How many hours on average do you interact with family or close friends on any given day?**

Add the total amount of hours per week that you interact and divide by the amount of days during which this interaction occurs.

1-2 hours     3-4 hours     5-6 hours     7 or more

**Question A4**  
**How many individuals/entities do you interact with on a personal level?**

The family unit counts for one entity.  
 Each close relationship out of the family unit reflects a personal interaction

1     2     3     4 or more

**Question A5**  
**How many hours on average are you involved with recreational activities on any given day?**

Add the total amount of hours per week involved in these activities and divide by the amount of days during which these activities occur.  
 Recreation refers to activities chosen for personal enjoyment.

1-2 hours     3-4 hours     5-6 hours     7 or more

**Question A6**  
**How many different recreational activities are you involved with on a weekly basis?**

1     2     3     4 or more

**Question A7**  
**Are you a family member working in a family business?**

Yes     No

**Question A8**  
**Do you work with a member of family or a close friend?**

Yes     No



## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

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**Question A9**  
Do you maintain an awareness of family and / or close friends while at work?

Yes  No

**Question A10**  
How many recreational activities do you share with a family member and/or a close friend?

None  1  2 or more

**Question A11**  
How many recreational activities do you share with a work colleague?

None  1  2 or more

**Question A12**  
Estimate your percentage fulfilment experienced in your present work environment:

100%  80%  50%  20%


**Question A13**  
Estimate your percentage fulfilment experienced in your personal environment:

100%  80%  50%  20%

[Continue to Verve Category](#)

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**Diagnostics: Verve Category**

**Question B1**  
How often do you experience periods of anxiety?

Often  Occasionally  Seldom  Never

**Question B2**  
How often do you look forward to new challenges?

Often  Occasionally  Seldom  Never

**Question B3**  
How often do you enjoy a good rapport with co-workers and family?

Often  Occasionally  Seldom  Never

**Question B4**  
How often do you feel aggressive and explosive?

Often  Occasionally  Seldom  Never

**Question B5**  
How often do you feel the need to control all aspects of work and home life?

Often  Occasionally  Seldom  Never

**Question B6**  
How often do you feel successful?

Often  Occasionally  Seldom  Never

**Question B7**  
How often do you feel low on energy?

Often  Occasionally  Seldom  Never

**Question B8**  
How often do you suffer from flu and other ailments?

Often  Occasionally  Seldom  Never

**Question B9**  
How often do you find that things fall into place?

Often  Occasionally  Seldom  Never

**Question B10**  
How often do you feel the need to use tranquilisers/antidepressive?

Often  Occasionally  Seldom  Never

**Question B11**  
How often do you show understanding towards those who are aggressive or depressed?

Often  Occasionally  Seldom  Never

**Question B12**  
How often do you have difficulty getting up in morning?

Often  Occasionally  Seldom  Never

## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

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**Question B13**

How often do you feel purposeful about the future?

- Often       Occasionally       Seldom       Never

**Question B14**

How often do you become argumentative?

- Often       Occasionally       Seldom       Never

**Question B15**

How often do you become intimidated by influential people?

- Often       Occasionally       Seldom       Never

**Question B16**

How often do you feel inspired to go to work?

- Often       Occasionally       Seldom       Never

**Question B17**

How often do you feel like trying new activities/going to new places?

- Often       Occasionally       Seldom       Never

**Question B18**

How often do you feel content with existing activities?

- Often       Occasionally       Seldom       Never

**Question B19**

How often do you envy people who are successful?

- Often       Occasionally       Seldom       Never

**Question B20**

How often do you experience negative self-esteem?

- Often       Occasionally       Seldom       Never

**Question B21**

How often do you accept criticism poorly?

- Often       Occasionally       Seldom       Never

**Question B22**

How often do you experience a positive response from the home environment?

- Often       Occasionally       Seldom       Never

**Question B23**

How often do you feel the need to be competitive?

- Often       Occasionally       Seldom       Never

**Question B24**

How often do you fear loss (of job, recognition, people)?

- Often       Occasionally       Seldom       Never

**Question B25**

How often do you become critical of people who are different?

- Often       Occasionally       Seldom       Never

**Question B26**

How often do you feel good about previous successes?

- Often       Occasionally       Seldom       Never

**Question B27**

How often do you experience disappointment and loss?

## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

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Often     Occasionally     Seldom     Never

**Question B28**  
**How often do you become anxious before going on holiday?**

Often     Occasionally     Seldom     Never

**Question B29**  
**How often do you find that planned events turn out favourably?**

Often     Occasionally     Seldom     Never

**Question B30**  
**How often do you experience a positive response from the work environment?**

Often     Occasionally     Seldom     Never

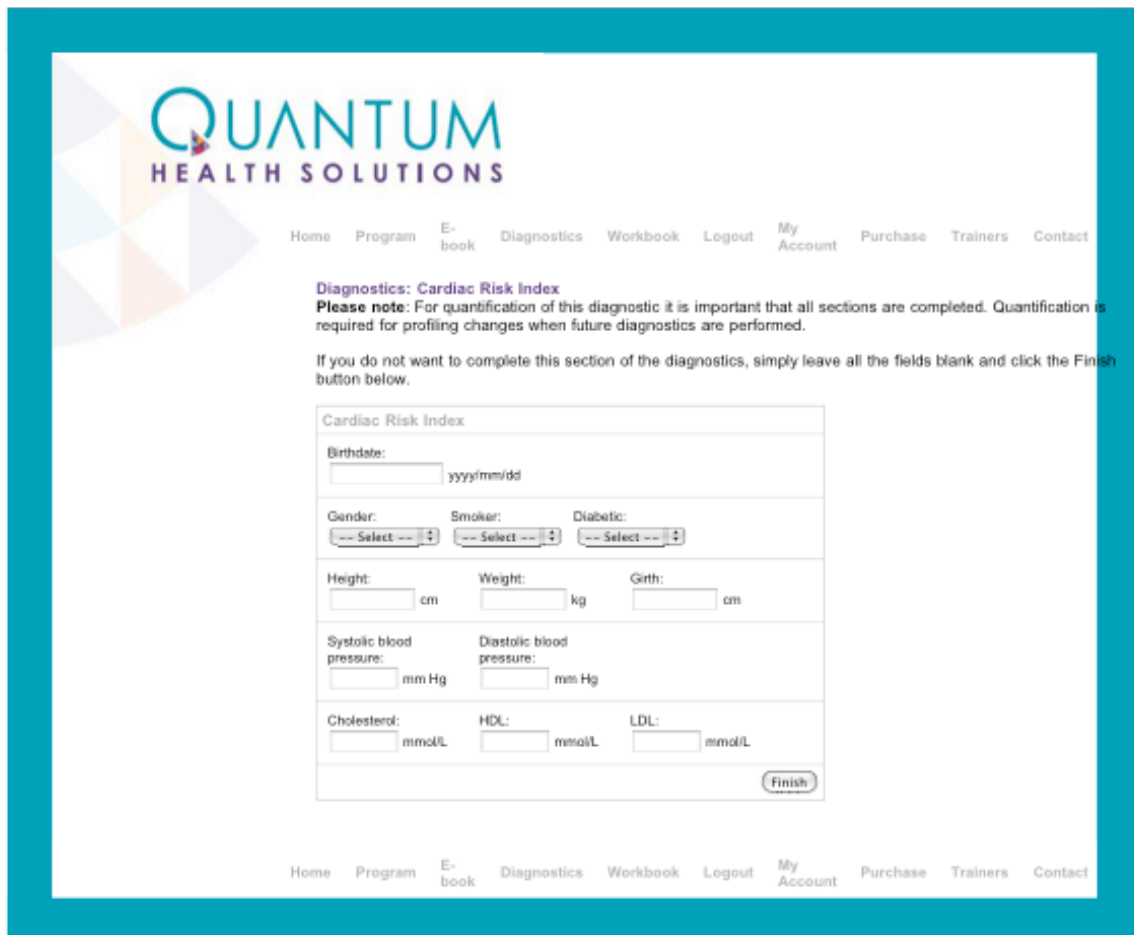
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## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

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2011/01/18 9:49 AM



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**Diagnostics: Cardiac Risk Index**  
**Please note:** For quantification of this diagnostic it is important that all sections are completed. Quantification is required for profiling changes when future diagnostics are performed.

If you do not want to complete this section of the diagnostics, simply leave all the fields blank and click the Finish button below.

Cardiac Risk Index

Birthdate:  yyyy/mm/dd

Gender:  --- Select --- | Smoker:  --- Select --- | Diabetic:  --- Select ---

Height:  cm | Weight:  kg | Girth:  cm

Systolic blood pressure:  mm Hg | Diastolic blood pressure:  mm Hg

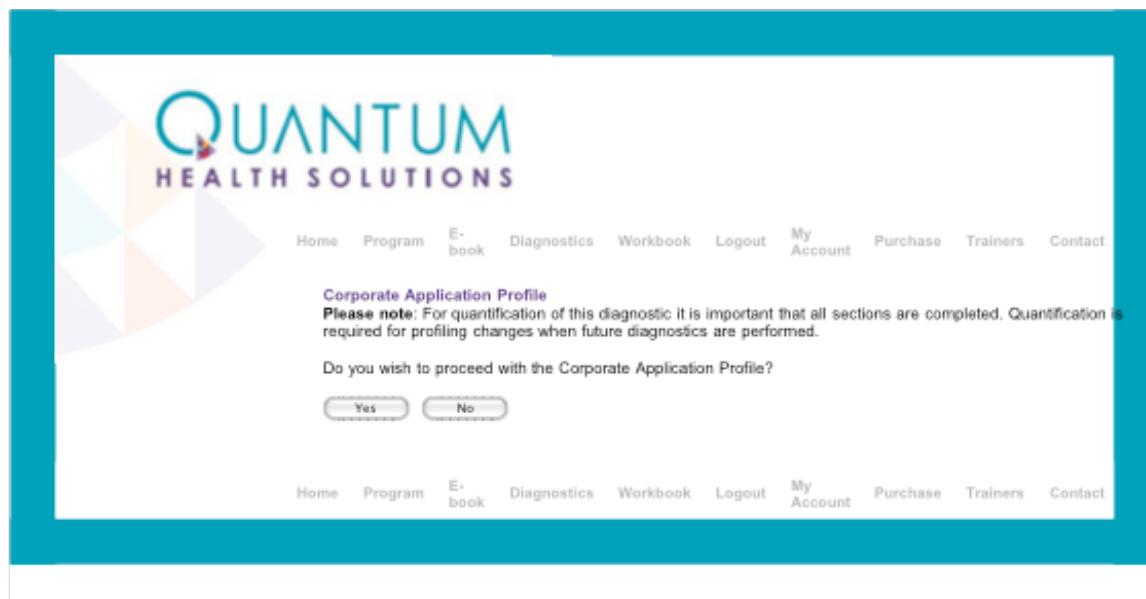
Cholesterol:  mmol/L | HDL:  mmol/L | LDL:  mmol/L

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## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

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The screenshot displays the Quantum Health Solutions website interface. At the top left is the logo, which consists of a stylized 'Q' made of overlapping triangles in shades of blue, orange, and purple, followed by the text 'QUANTUM HEALTH SOLUTIONS'. A navigation menu is located at the top right, containing links for Home, Program, E-book, Diagnostics, Workbook, Logout, My Account, Purchase, Trainers, and Contact. The main content area features a heading 'Corporate Application Profile' and a 'Please note' section stating that all sections must be completed for quantification and profiling. Below this is a question: 'Do you wish to proceed with the Corporate Application Profile?'. Two buttons, 'Yes' and 'No', are provided for the user's response. The same navigation menu is repeated at the bottom of the page.

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**Corporate Application Profile**  
**Please note:** For quantification of this diagnostic it is important that all sections are completed. Quantification is required for profiling changes when future diagnostics are performed.

Do you wish to proceed with the Corporate Application Profile?

Yes No

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## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH



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### Corporate Application Profile

**Part A**  
Select one option per question that best describes you in the work environment.

1. I feel purposeful	Always
2. I feel low on energy	Often
3. I like trying new things	Occasionally
4. I feel stressed	Rarely
5. I feel worthless	Never
6. I feel confident	Always
7. I feel vengeful	Often
8. I lose my temper	Occasionally
9. I feel successful	Rarely
10. I feel bored	Never
11. I develop illness symptoms	Always
12. I feel that I'm an important part of the team	Often
13. I feel unmotivated	Occasionally
14. I'm content to work long hours	Rarely
15. I fear retrenchment	Never

**Part B**  
Arrange the following list of words to best describe you in the work environment. Arrange the list in order of accuracy, with words that best describe you at the top of the list, and words that least describe you at the bottom of the list.

To move a word closer to the top of the list, click on it and then click the Move Up button.

To move a word closer to the bottom of the list, click on it and then click the Move Down button.

**More like me**

Stressed  
 Confident  
 Ambitious  
 Bored  
 Innovative  
 Successful  
 Manipulative  
 Low on Energy  
 Dissatisfied  
 Harassed

**Less like me**

**Part C**  
Arrange the following list of words to best describe you in the work environment in the eyes of your colleagues.

**More like me**

Important  
 Leader  
 Aggressive  
 Intolerable  
 Understanding  
 Incompetent  
 Wise  
 Unfortunate  
 Successful  
 Dispensable

<http://www.pninet.com/workgroups/index.php?page=account&sc=corpdia2&diagid=1825&gsi=9590c870cb5c54dde1a9b420da2afac3>

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## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

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Less like me

Finish Diagnostics

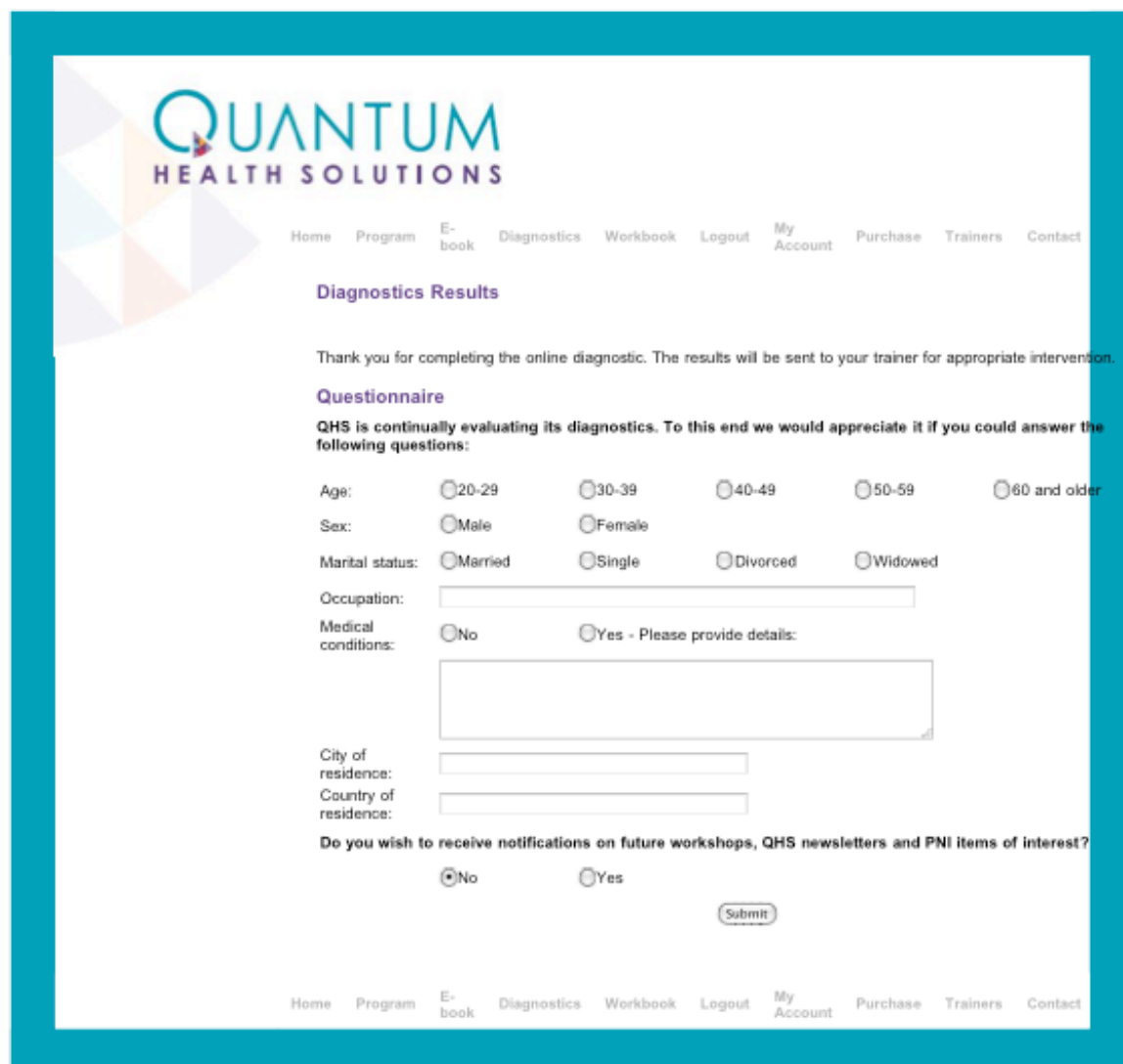
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### Diagnostics Results

Thank you for completing the online diagnostic. The results will be sent to your trainer for appropriate intervention.

#### Questionnaire

**QHS is continually evaluating its diagnostics. To this end we would appreciate it if you could answer the following questions:**

Age:  20-29  30-39  40-49  50-59  60 and older

Sex:  Male  Female

Marital status:  Married  Single  Divorced  Widowed

Occupation:

Medical conditions:  No  Yes - Please provide details:

City of residence:

Country of residence:

**Do you wish to receive notifications on future workshops, QHS newsletters and PNI items of interest?**

No  Yes

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## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

## Appendix B

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**QUANTUM HEALTH SOLUTIONS**

General Users Logout

Diagnostics program run on 2011-01-18, for TEST\_Logotherapy Introductory Group 2010.

[Printable version](#)

### 1. Verve Configuration

1cm scale

Work/application=12cm  
Personal/inter-personal=4cm  
Recreation=2cm



#### 1.1 Interpretation of Diagnostics: Triangle Configurations

Identify the three triangles representing *Work/Application*, *Personal/Interpersonal* and *Recreation*.

Work/Application = Red  
Personal/Interpersonal = Blue  
Recreation = Green



Confirm the heights of the triangles – refer to the actual print-out measurement at the top right-hand corner or use the scale of 1cm at the top left-hand corner.

Alpha/Bravo = 5 or more cm in height  
Charlie = 3 or less cm in height  
3 – 5 cm represents a transitional zone which is barely sustainable in terms of Verve vitality (PNI resilience).

Probe to see if the height is truly representative of purposeful energy and not indicative of a pseudo-verve phenomenon:  
The effective height of the triangle (work and personal) is indicated by a superimposed ghost line. This delineates the actual Verve value of the configuration and may therefore reflect the degree of pseudo-Verve.



## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

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**1.2 Interpretation of Diagnostics: Triangle Integration**

Note if the triangles overlap and to what degree. There are only three degrees of overlap:



No overlap = non-integration

One level overlap = partial awareness across overlapped zones

Two level overlap = full awareness of the overlapped zones

The recreation triangle will be replicated if there exists an overlap of recreation with personal individuals as well as with work colleagues.

**2. Verve Category**

Profile Score: **71**

Verve Category: **Alpha/Bravo**

**Scoring Key:**

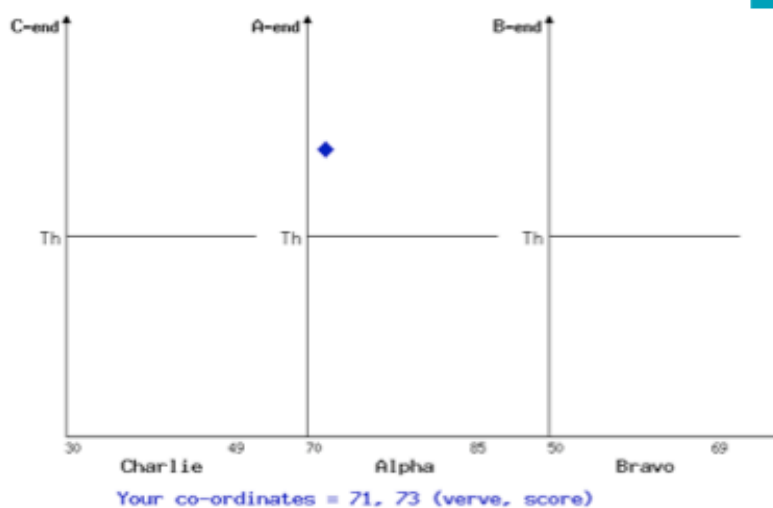
Alpha 80 and higher

Alpha/Bravo 70 - 79

Bravo 55 - 69

Bravo/Charlie 35 - 54

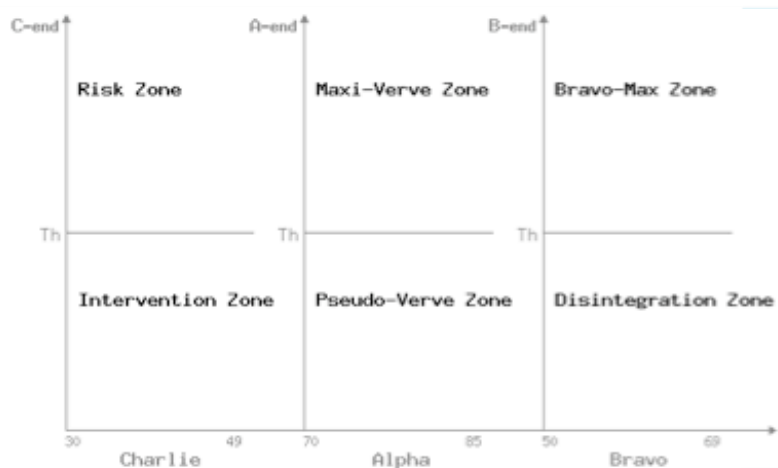
Charlie 34 and less

**3. Corporate Application Profile**

## EXPLORING THE RELATIONSHIP BETWEEN MEANING AND HEALTH

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### 4. Cardiac Risk Index

#### Girth Measurement

A high-risk waist measurement is 90 cm or more for women.

Your waist measurement is 72.00 cm.

#### Body Mass Index (BMI)

It is recommended that you aim for a BMI of between 18.5 and 25.

With a weight of 57 kg and a height of 163 cm, your calculated BMI is 21.45.

For your height, your ideal weight is between 49.2 and 66.4 kg.

\*\* Health risk based on height and weight \*\*

Your current weight does not pose a health risk.

#### Coronary Heart Disease Risk

Your cardiac risk could not be calculated due to missing input values.

### 5. Interpretation of Wellness and Performance Status

#### Triangular Configuration

There is adequate gratification within your work/application environment. This provides more than adequate chemical resilience in terms of wellness and performance.

There is adequate gratification within your personal/interpersonal environment. This provides more than adequate chemical resilience in terms of wellness and performance.

#### Verve Score

You have near optimal levels of self-confidence and self-esteem. In this regard you have the capacity for personal self-development and enjoyment. However you should guard against

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complacency as this may lead to a pseudo-verve state in which you lose meaning, purpose and personal gratification.

#### Corporate Profile

You are currently in a maximally resourceful zone in your work environment. All that you need to guard against is possibility that you lose touch with individuals at "the coal face". This may occur if you become too preoccupied with the bigger picture and thereby lose sight of the finer details and the practical requirements thereof.

#### 6. Questionnaire

Age	<b>40-49</b>
Sex	<b>Female</b>
Marital Status	<b>Married</b>
Occupation	<b>Consultant</b>
Medical Conditions	<b>No</b>
Medical Details	
City	<b>Gauteng</b>
Country	<b>SA</b>

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