

THE RELATIONSHIP BETWEEN TRAIT ANXIETY AND ANXIETY SENSITIVITY

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*Dedicated to my parents, Albert and Hennie,
for the unconditional love and support of
their three children.*

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Abstract

Anxiety Sensitivity (AS) is a useful psychological construct in understanding the development of general and clinical anxiety. An increased amount of research has recently been conducted in this area. Since the development of the 16-item Anxiety Sensitivity Index (ASI), there has been deliberation in the literature about the relationship of the AS construct and the ASI, to the personality construct of trait anxiety. Central to this discussion is the notion that AS is nothing more than trait anxiety. This position brings into question the conceptual and empirical validity of AS. This study aimed to explore and describe the relationship between trait anxiety and anxiety sensitivity, through the use of an exploratory-descriptive correlational design. Levels of trait anxiety were determined through the use of subscales on the Sixteen Personality Factor Questionnaire (16PF) and anxiety sensitivity through the use of the ASI. Using a convenience sampling technique, 84 student volunteers completed the 16PF and ASI. Descriptive statistics and inferential statistics were employed for data analysis. The results indicate that the sample group had the capacity to express emotional energy along integrated channels and was thus well suited for exploring the relationship between the construct of trait anxiety and anxiety sensitivity. The relationship between trait anxiety and AS in the sample group was explored through the use of two statistical procedures. Firstly, the coefficient of determination (r^2) was calculated and revealed that 24% of the variance among the ASI scores were attributable to variations in Factor QII scores of the 16PF and vice-versa. Secondly, a multiple regression analysis technique revealed that 28% of the variance in the ASI score could be explained by the combination of factors Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q₃ (ability to bind anxiety) of the 16PF. These key findings are in line with other research in that the constructs of trait anxiety and anxiety sensitivity showed a level of variance. As such, it was concluded that although the constructs may be related, they are not synonymous.

Key words: Anxiety, Personality, Trait anxiety, Anxiety sensitivity

Chapter 1

Introduction

1.1. Chapter Preview

This introductory chapter addresses the general orientation to and motivation for the research study and sets out the aim and objectives. A brief overview of the chapters in this study is then presented.

1.2. Orientation to and Motivation for the Study

Concern with fear and anxiety are as old as the history of humankind. For example, the concept of fear was clearly represented in ancient Egyptian hieroglyphics and was also recognized in Greek and Roman literature as a powerful motivator of behaviour. Furthermore, the historical roots of contemporary scientific conceptions of fear and anxiety can be found in the philosophical and theological views of Pascal in the 17th Century and Kierkegaard in the 19th Century (May, 1979). In addition to this, the emergence of anxiety as a scientific construct can be seen in the writings of Darwin (1965) who considered anxiety to be an inherent and adaptive characteristic of both humans and animals that had evolved over generations through the process of natural selection. Darwin (1965) indicated that observable manifestations of anxiety included trembling, dilation of the pupils, increased perspiration, changes in voice quality, erection of the hair, and specific facial expression. He also observed that anxiety varied in intensity - from mild apprehension or surprise to an extreme “agony of terror” (p. 27).

Sigmund Freud (1936), one of psychology’s most influential theorists, viewed anxiety with such importance that he titled one of his manuscripts “The Problem of Anxiety”. Freud (1924) described anxiety as “something felt,” an unpleasant emotional state or condition characterized by subjective

feelings of chronic apprehension, “all that is covered by the word ‘nervousness’ ” (p. 79). According to Freud (1924), anxiety consisted of a unique combination of phenomenological and physiological qualities with behavioural manifestations similar to those Darwin (1965) attributed to fear. Although the physiological properties of anxiety were essential characteristics, the subjective experiential qualities - feelings of tension, apprehension, nervousness and dread were emphasized in Freud’s (1924) theoretical formulations.

Freud (1924) initially believed that anxiety resulted from the discharge of repressed, somatic sexual tensions (libido). He stated that when blocked from normal expression, libidinal energy accumulated and was automatically discharged as free-floating anxiety. He subsequently modified this view in favour of a more general conception of anxiety as a signal indicating the presence of a dangerous situation. The perceived presence of danger evokes an unpleasant emotional state that serves to warn the individual that some form of adjustment is necessary.

In more recent times, anxiety has been defined as an unpleasant emotional state or reaction that can be distinguished from others, such as anger or grief, by a unique combination of experiential qualities and physiological changes (Spielberger & Rickman, 1990). More specifically, an anxiety state has been described as consisting of feelings of tension, apprehension, nervousness, and worry, and activation of the autonomic nervous system. The physiological manifestations generally include increased blood pressure, rapid heart rate (palpitations, tachycardia), sweating, dryness of the mouth, nausea, vertigo (dizziness), irregularities in breathing (hyperventilation), and muscular skeletal disturbances (i.e., restlessness, tremors, and/or feelings of weakness) (Spielberger & Rickman, 1990).

Although the meaning of anxiety differs from culture to culture, it is generally accepted that increased anxiety is “normal” in any situation in which immediate danger might result in physical harm. Anxiety is also said to be a normal reaction of individuals to social-evaluative situations that

pose threats to their self-esteem or psychological well-being. However, the occurrence of anxiety in situations in which there is no real physical or psychological danger or when the emotional reaction is disproportionate in intensity to the actual danger, generally indicates the presence of what has been termed neurotic anxiety, free-floating anxiety or clinical anxiety (Spielberger & Rickman, 1990).

People vary in their proneness to experience anxiety (McNally, 1999). Some may experience anxiety symptoms with the slightest aggravation whereas others may become anxious only under the most stressful circumstances. The construct of trait anxiety, as part of the individual's personality, denotes these differences in anxiety proneness (McNally, 1999).

Factor analytic studies conducted by Cattell and Scheier (1961) determined different types of anxiety concepts. They identified two distinct anxiety factors which they labelled "trait anxiety" and "state anxiety" on the basis of the procedures by which these factors were isolated. Variables that loaded on the relatively stable trait anxiety factor included: "ergic tension, ego weakness, guilt proneness, suspiciousness, and tendency to embarrassment" (p. 57). Physiological variables, such as respiration rate and systolic blood pressure that fluctuated over time, loaded strongly on the state anxiety factor but only slightly on trait-anxiety.

In line with Cattell and Scheier (1961), Spielberger (1975) distinguished between state and trait anxiety. Spielberger (1975) defined state anxiety (SA) in terms of observable behaviours, physiological events, and cognitive symptoms, while trait anxiety (TA) referred to individual differences in anxiety proneness as a relatively stable personality trait (Spielberger, Pollans & Worden, 1984). It is not directly manifested in behaviour, but may be inferred from the frequency that a person experiences elevation in state anxiety over time. Persons who are high in TA are more vulnerable to stress and respond to a wider range of situations as dangerous or threatening (Spielberger, 1975).

Just as people vary in their proneness to experience anxiety symptoms, they also vary in their perception of these symptoms. Most people would regard anxiety as merely unpleasant, whereas others may consider it with dread. The construct of anxiety sensitivity (AS) denotes these individual differences in the perception of anxiety (Reiss & McNally, 1985). AS refers more specifically to fears of anxiety symptoms that are based on beliefs that these symptoms have harmful consequences.

The construct of AS was developed as part of the broader theoretical framework of expectancy theory in which Reiss (1999) attempted to account for individual differences in the tendency to acquire common fears and related phenomena. This theory holds that human motivation to avoid a feared object is a function of two classes of variables, namely expectations and sensitivities. Expectations refer to “what the person thinks will happen when the feared object/situation is encountered (e.g., ‘I expect the plane will crash’, ‘I expect to have a panic attack during the flight’, ‘I expect other people will notice my fear of flying’)” (Reiss, 1991, p.142). Sensitivities (fundamental fears) refer to “the reasons a person holds for fearing the anticipated event (e.g., ‘I can’t stand the thought of being handicapped’, ‘Panic attacks cause heart attacks’)” (Reiss, 1991, p.142). Reiss’s theory proposed that broad individual differences in sensitivities exist and that “danger and anxiety expectancies are situation-specific factors, whereas anxiety sensitivity is a person-specific factor” (Reiss & McNally, 1985, p.112). Expectations and sensitivities theoretically provide the key to understanding human fears.

Reiss (1991) suggested that AS is a predisposing personality factor in the development of anxiety disorders. He also related AS to problems such as insomnia, some types of substance abuse, posttraumatic stress disorder, and other stress-related illnesses (Cox, Borger & Enns, 1999). In particular, AS has come to be treated by many investigators as a cognitive risk factor for panic

disorder. McNally (1994) noted that “pre-existing beliefs” about certain bodily sensations may “predispose” people to respond to them fearfully and thereby panic (p.166).

Anxiety sensitivity as an important psychological phenomenon has however not gone unchallenged. There has been considerable discussion regarding the degree to which AS is distinct from TA as data mounts in favour of AS existing as a valid construct (McWilliams & Cox, 2001). Existing research has been used both to support the distinction between the two constructs (McNally, 1996) and to argue against such distinction (Lilienfeld, Turner & Jacob, 1996). Lilienfeld, Tuner and Jacob questioned the conceptual and empirical distinction between AS and TA. They argued that anxiety sensitivity is simply trait anxiety and that the results attributed to AS are more cautiously explained by TA (Reiss, 1997).

In addition to this, Taylor, Koch and Crockett (1991) surveyed five correlations between measures of TA and AS and found them to range from .07 to .55 with a median correlation of .46. The *r*-squared value of the median correlation indicated that the measures of AS and TA typically share 21% common variance. These correlations have been characterised as “modest” (McNally, 1999, p.10) and are viewed as evidence that TA and AS are related but distinct constructs.

Reiss (1997) elaborated on the distinction between these constructs by stating that TA and AS use different indicators to predict future anxiety or fear. According to Reiss (1997), TA predicts future anxiety based on anxiety experiences of the past, whereas AS predicts future fearfulness regardless of the frequency or the intensity of anxiety experiences in the past. Since past experiences of anxiety and beliefs about the consequences of anxiety are different phenomena, Reiss (1997) suggested that TA and AS are different constructs. In concurring with Reiss (1997), Spielberg (1985) held the view that the frequency and intensity at which anxiety states have been experienced in the past, provide the basis for predicting the probability that (state) anxiety reactions will be manifested in future.

In light of the aforementioned debate, there is a call for further exploration and description of the relationship between TA and AS. To this end, this study is motivated towards addressing this need. The present study is unique, as a literature search has revealed that the relationship between the two constructs has not yet been explored by means of the measures utilised in this study. Other studies have utilized Spielberger's State-Trait Inventory, Trait Form (STAI-T) (Sandin, Chorot & McNally, 2001). It is hoped that the results obtained will contribute to the discussion surrounding the findings that anxiety sensitivity is either an independent construct or merely a factor of trait anxiety.

In addition, there is a need to understand more about levels of AS within the South African context. Given the potentially debilitating effects of anxiety, it would appear pertinent to work towards an improved understanding of persons inflicted with high levels of AS. This knowledge may assist towards reducing the incidence and frequency of anxiety disorders.

1.3. Aim and Objectives of the Study

The aim of this study is to explore and describe the relationship between trait anxiety and anxiety sensitivity.

In order to accomplish this aim, the following objectives were identified:

1. Describe the scores of the sample on the Anxiety Sensitivity Index (ASI) and the factors of the Sixteen Personality Factor Questionnaire (16PF) that tap trait anxiety, namely: Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q₃ (ability to bind anxiety) and the second-order factor QII (anxiety).
2. Explore and describe possible gender differences for scores on the ASI and the factors Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q₃ (ability to bind anxiety) and the second-order factor QII (anxiety) of the 16PF.

3. Explore and describe the relationship between scores of the ASI and the second-order factor QII (anxiety) scores of the 16PF.
4. Establish the degree of relationship between the ASI scores and the scores of the 16PF that tap trait anxiety namely: Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness) and Q₃ (ability to bind anxiety).

1.4. Chapter Delineation

The following is an overview of the manuscript's chapters. Chapter 1 served as a brief introduction and general orientation to the content of the study. The literature is reviewed in Chapters 2, 3 and 4.

Chapter 2 contains a theoretical overview of the broader concept of anxiety and possible explanations to the development of anxiety. Chapter 3 describes the construct "personality" and provides an overview of models and methods of personality conceptualisation. Particular emphasis is given to the work of Raymond Cattell and the development of the trait anxiety concept as measured by the Sixteen Personality Factor Questionnaire. Chapter 4 outlines the construct of anxiety sensitivity and focuses on the debate surrounding its relationship to the construct of trait anxiety.

Chapter 5 delineates the methodology of the study, including the research design, the participants, the sampling procedure, measuring instruments and the analysis of data. Chapter 6 presents and discusses the results of the study. The final chapter, Chapter 7, expounds conclusions, discusses the value and limitations of the study and makes recommendations with regard to future research.

Chapter 2

Anxiety Theory

2.1. Chapter Preview

Anxiety is the main focus of this study and it is thus appropriate that this chapter begins by introducing the concept of anxiety. The term anxiety is often mistakenly used and it is important to provide a clear distinction between the terms anxiety, fear and worry. What follows is an exposition of possible positive and negative outcomes associated with anxiety as viewed by various authors. An examination on the prevalence and course of anxiety is furthermore included, ending with a discussion on explanations giving rise to the phenomena of anxiety.

2.2. Defining Anxiety

Terminology used to describe the experience of anxiety abounds in the English language. Some common examples are: fear, dread, phobia, fright, panic, and apprehensiveness. Each of these terms can be further qualified with words such as acute, morbid, generalised, or diffuse to provide different shades of meaning. Taken together, all contribute to providing a puzzling picture on what is understood by the term anxiety.

The German word *angst* forms the basis for understanding the term anxiety in psychopathology. It was used by both Kierkegaard and Freud. For Kierkegaard, *angst* meant both dread and anxiety (Barlow, 1988). For Freud, *angst* came to reflect the notion of anxiety without an identifiable object. Rather, *angst* was a vague apprehension about the future. When anxiety was directed towards an object, Freud preferred the word *furcht* (fear) (Barlow, 1988).

Lewis (1980) suggested that a precise translation of *angst* would be the words: agony, dread, fright, terror, consternation, alarm, or apprehension. Essentially, the word *angst* signifies a more

devastating emotion than the English word of anxiety. As Lewis (1980) pointed out, the relevant root word passed down from Greek and Latin is *angh*, which refers literally the concepts of narrowness or constriction in the English language. Various derivatives of this root have evolved differently in different Western languages as can be seen by examining the number of words in English with the *angh* root. Among these are anxiety, anguish and anger (Lewis, 1980).

For the purpose of this study, anxiety is understood in terms of the definition provided in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000). The DSM-IV-TR (2000) defines anxiety as an “apprehensive anticipation of future danger or misfortune accompanied by a feeling of dysphoria or somatic symptoms of tension” (p. 820).

The term anxiety is often used interchangeably with the terms fear and worry. This is a misnomer and requires further clarification. To clearly distinguish between the terms anxiety, fear and worry, comparisons between these terms are made in the paragraphs that follow.

2.2.1. Fear and Anxiety

As with Kierkegaard, modern authors use the terms of fear and anxiety interchangeably. However, when used in the field of psychopathology, the terms fear and anxiety point in different directions. It is argued that these terms refer to states that are distinct from one another. Antony and Barlow (1997) viewed anxiety as a future-oriented emotional state characterized by high negative affect, a sense that upcoming events are uncontrollable and unpredictable, difficulty concentrating, and a tendency to worry. For example, an individual who is anxious about performance situations might experience anxiety when anticipating an upcoming presentation. Or, an individual who is anxious about dogs might feel anxious while anticipating visiting a friend who lives with a large dog. In contrast to anxiety, fear is a focused, all-or-nothing, alarm reaction in which there is an intense motivation to escape from a potential danger, and in which the organism is mobilised both

physically and cognitively for action (Antony & Barlow, 1997). For example, an individual might experience the emotion of fear while giving a stressful presentation or while exposed to a large, growling dog.

2.2.2. Worry and Anxiety

Liddell (1949) described anxiety as the shadow of intelligence. By this he was referring to the human tendency to look to the future in an attempt to plan for potentially difficult or threatening events. Worry is closely associated with this planning function (Barlow, 1988). Theorists agreed that the principal function of worry is to attempt to cope with future threat (Eysenck, 1992; Gray, 1982; Mathews, 1990). As such, worry can be a normal and adaptive process that may become pathological if carried to extremes (Barlow, 1988).

In light of the afore-stated, the normal worry process can be viewed as a successful problem-solving activity. This is however only the case when not accompanied by significant anxiety (Davey, 1994). Specifically, Davey (1993) found that worry was associated with a range of problem-focused coping abilities after adjustments were made for levels of trait anxiety. In other words, worry and trait anxiety contributed unique sources of variance in that worry was positively correlated and trait anxiety negatively correlated with cognitive coping and problem solving. Davey (1994) and Ladouceur, Blais, Freeston, and Dugas (1998) have noted that pathological worry does not imply that problem-solving abilities are absent. The presence of anxiety instead reduces perceived control over problem-solving abilities resulting in less confidence that the process will be fruitful.

Craske (1999) argued that worry is not synonymous with anxiety. It is rather a closely associated consequence of anxiety. Her reasoning is based on findings, that despite high correlations between trait anxiety and worry (e.g., Tallis, Eysenck, & Mathews, 1992), worry and anxiety account for

unique sources of variance (Davey, Hampton, Farrell, & Davidson, 1992).

The process of worry may best be considered an independent process that attempts to adapt or cope with threat or danger. Although this is an independent process, anxiety does impact on the process of worry. As anxiety increases and becomes chronic, so does the process of worry until pathological levels of each process are attained. At this point, the process of worry is an out-of-control, unadaptive process that interferes with performance (Craske, 1999).

2.2.3. Worry, Anxiety and Fear Continuum

The relationship between anxiety, fear and worry is explained by Craske (1999). According to this author, future potential threatening events elicit worry but as imminence of the event increases, worry shifts to anxiety. Very close to the event, anxiety shifts to fear. Each state is associated with a different response pattern that is most adaptive to a particular level of threat. Thus, the state of worry is a primarily cognitive-verbal state, with suppression of autonomic arousal to facilitate cognitive processing and planning in preparation for threat. Anxiety is associated with more autonomic arousal from which immediate fight/flight mobilisation is able to occur when needed. At the same time, some degree of cognitive processing is maintained to assist detection of cues and predictors of increasing threat (i.e., vigilance). Fear is associated with abrupt and intense arousal for immediate fight or flight and entails limited resources for cognitive processing.

Conceptualising arousal along a continuum, the concepts of anxiety, fear and worry are viewed as closely related but distinct. Worry is a normal and adaptive process, which attempts to cope with future threat. Anxiety is a response to a threat that is unknown, internal or vague. Fear on the other hand, is a response to a known, external and definite threat. Taken to the extreme, both fear and anxiety can have negative consequences for the individual. It is however important to consider that although anxiety can have negative consequences, there are schools of thought that support the

notion that anxiety can simultaneously hold positive outcomes for the individual. This paradox of anxiety warrants further discussion.

2.3. Paradox of Anxiety

As previously cited, anxiety can simultaneously hold both positive and negative outcomes for an individual. To clarify this paradox of anxiety, the following discussion firstly describes anxiety as motivator and secondly as destroyer.

2.3.1. Anxiety as Motivator

The discourse surrounding the experience of anxiety is long-standing. Philosophers have indicated that the experience of anxiety may hold some benefit. It may lead to a greater sense of fulfilment and actualisation. Kierkegaard (1944) made this proposal by suggesting that the source of anxiety is deep within the individual. Anxiety for Kierkegaard (1944) is rooted not just in a fear of death, but in a fear of non-existence, non-being, or nothingness. Only through recognising and confronting the fear of becoming nothing, can one truly discover the essence of being. Through this experience, a clear distinction is made between the self and other objects and from non-being.

Rollo May (1979) proposed a similar cause for diffuse and objectless anxiety. The confrontation of purpose and meaning of anxiety results in a higher level of existence and a greater appreciation of what it is to be alive. He stated the following:

[Anxiety is] the apprehension cued off by a threat to some value that the individual holds essential to his existence as a personality. The threat may be to physical life (a threat of death), or to psychological existence (the loss of freedom, meaninglessness). Or the threat may be to some other value which one identifies with one's existence (patriotism, the love of

another person, success, etc.) (p. 180).

Freud saw anxiety as the cue to the activation of elemental threats to the child, which are stored in memory and elicited in the adult by a variety of learned associations (Freud, 1959; Michels, Frances, & Shear, 1985). In this sense, anxiety is related to the persistence of remembered danger situations that seemed real at an earlier stage of development. Anxiety thus functions to warn of a potential danger situation and triggers the recruitment of internal psychological and/or external protective mechanisms. Effective psychological defence mechanisms serve the adaptive purpose of shielding the wholeness of the person and allowing a superior and mature level of functioning. Anxiety may also be adaptive in that it may motivate the individual to seek help from others when there is real danger (Shear, Cooper, Klerman, & Busch, 1993). In addition to the aforementioned, psychologist Howard Liddell (1949) maintained the following with regard to anxiety:

The planning function of the nervous system, in the course of evolution, has culminated in the appearance of ideas, values, and pleasures - the unique manifestations of man's social living. Man, alone, can plan for the distant future and can experience the retrospective pleasures of achievement. Man, alone, can be happy. But man, alone, can be worried and anxious. Sherrington once said that posture accompanies movement as a shadow. I have come to believe that anxiety accompanies intellectual activity as its shadow and that the more we know of the nature of anxiety, the more we will know of intellect (p. 185).

Liddell (1949) spoke of anxiety as the shadow of intelligence. Although Liddell was referring to human experience, his scientific explorations concerned the development of pathological anxiety in animals. He produced what came to be called "experimental neurosis". A consequence of

experimental neurosis is that animals become more vigilant concerning future threats. Liddell theorised that vigilance has positive consequences in addition to simply helping the animal to notice more quickly the next threat to its well-being. He observed that vigilant animals seem to be conditioned to learn more easily. Vigilance, therefore, which Liddell supposed to be the animal counterpart of anxiety, may produce more learning and therefore more intelligent animals. It is the type of learning that is particularly important. The vigilant animal, occupied as it is with future threat, is concerned with what is going to happen in the immediate future. In similar fashion with humans, a future planning function may be considered adaptive. Liddell (1949) suggested that effective planning for the future and the retrospective enjoyment of past achievements are the means by which human beings construct culture. The capacity to experience anxiety and the capacity to plan are therefore two sides of the same coin.

It has been known for approximately a hundred years that physical and intellectual performance is driven and enhanced by the experience of anxiety, at least up to a point (Barlow, 2002). The debate now shifts to focus on the point at which anxiety no longer holds benefit.

2.3.2. Anxiety as Destroyer

Despite the apparent benefits of anxiety, it is estimated by Barlow (2002) that individuals in the United States of America spend billions of dollars annually to liberate themselves of anxiety. The costs of physician consultations and the use of health care services by individuals with anxiety disorders are estimated to be twice what they are for those without anxiety disorders (Simon, Ormel, Von Korff, & Barlow, 1995). It may seem probable that individuals so afflicted, view anxiety as something they would rather live without.

The incidence of suicide in patients with anxiety disorders has been found by Coryell, Noyes and House (1986), to equal the frequency of matched groups suffering from depression. These authors

speculated that patients diagnosed with anxiety disorders might subsequently develop major depression or alcoholism as a complication. In a subsequent study, it was found that 20% of patients with panic disorder (characterised as an anxiety disorder according to the DSM-IV-TR, (2000)) had made a suicide attempt at some point during their lives (Weissman, Klerman, Markowitz, & Ouellette, 1989). Allgulander (1994) conducted a study involving approximately 10 000 patients with anxiety disorders. He concluded that the risk for completing suicide before the age of 45 years among men and women with anxiety disorders (without any other psychiatric diagnoses), was between 4.9 and 6.7 times that of the risk in the general population. From these findings, it does appear that the road to suicide may at times begin with anxiety.

Kawachi et al. (1994) examined just over 33 000 male health professionals between the ages of 42 and 77 to assess the relationship between anxiety and the risk of coronary heart disease. It was found that men with the highest levels of phobic anxiety had a level of risk for fatal coronary heart disease three times higher than that of men with lower levels of anxiety. More importantly, the relative risk was limited to men experiencing sudden cardiac death as opposed to non-sudden coronary death. Men with the highest levels of phobic anxiety had a relative risk of sudden death six times that of men with the lowest anxiety levels.

Suicide and heart disease may be extreme consequence of the experience of anxiety but evidence indicates that the relationship of substance use disorders, particularly alcohol abuse and dependence to anxiety disorders, is high. In an early study, Quitkin, Rifkin, Kaplan and Klein (1972) reported on 10 patients with anxiety disorders who also suffered severe complications from drug and alcohol dependence. Quitkin et al. suggested that patients presenting with substance dependence may be self-medicating an anxiety disorder.

More recent studies have also reported a high range from 25% to 45% of patients with alcohol abuse problems presenting with one or more anxiety disorders (Kushner, Sher, & Beitman, 1990;

Mullan, Gurling, Oppenheim, & Murray, 1986). In addition, Cox, Norton, Dorward, and Fergusson (1989) found that over 50% of a group of inpatients with alcohol-related diagnoses reported at least one panic attack (commonly associated with anxiety disorders) in the three weeks prior to conducting their research. Over 80% of these patients reported using alcohol to self-medicate their panic attacks.

Periods of abstinence of alcohol abuse seem to result in a general improvement in fear and anxiety in many patients (Stockwell, Smail, Hodgson, & Canter, 1984). Thus, contrary to myth, alcohol does not necessarily reduce anxiety and fear in the long term and may in fact worsen it (Thyer & Curtis, 1984). Alcohol use seems to have an adverse effect on mood, creating a vicious cycle (Kushner, Abrams & Borchardt, 2000). Thus anxiety and panic, when self-medicated with alcohol, result in a downward self-destructive spiral. This is not only from the effects of alcohol addiction, but also from the aggravated consequence of the drugs on the anxiety and panic (Kushner et al., 2000). It may be this complication, along with the development of helplessness and depression, that leads to the increased risk of suicide in patients with anxiety (Norton, Rockman, Luy & Marion, 1993).

Alcohol is not the only substance that has a notable association with anxiety. Louie et al. (1996) contended there is a strong association between the use of cocaine and panic disorder. Patients reported developing panic attacks after considerable use of cocaine. A significant finding was that panic disorder continued after cessation of cocaine use and misuse. It could thus be speculated that cocaine use may have been an attempt at combating the anxiety associated with panic disorder.

Diverse sources (e.g., Liddell, 1949; May, 1979; Shear et al., 1993) have emphasised the importance of anxiety to creativity, intelligence and to survival itself. But for those so afflicted, a high level of anxiety is unlikely to be considered a growth experience. For these individuals in the course of their everyday life, it may be a life-and-death struggle with the ever-present prospect that

death may win. There is evidence that death does win on occasion as a result of the cumulative cost of anxiety.

Further to the individual experience of anxiety, whether it is positive or negative, it is pertinent to establish the occurrence of anxiety in society in general. The prevalence and course of anxiety will be discussed in the paragraphs that follow.

2.4. Prevalence and Course of Anxiety

The Epidemiological Catchment Area (ECA) survey involving approximately 12 000 individuals across five different sites in the United States revealed an unexpectedly high prevalence of anxiety disorders in the general population (McNally, 1994). With reference to these findings, Barlow (2002) stated:

...these startling statistics have established one overriding fact: Anxiety disorders represent the single largest mental health problem in the country [United States]. The prevalence of anxiety disorders in the ECA study surpass that of any other mental health disorder, including substance use disorders... (p. 23).

Studies such as the ECA survey have shown that millions of individuals each year seek help for what is broadly understood as anxiety or nervousness (Barlow, 2002). In an early study, Marsland, Wood, and Mayo (1976) surveyed the reasons why patients visit their local physicians. They found that hypertension, cuts and bruises and sore throats ranked behind a general medical check-up as the most common reasons motivating a visit. Close behind these common problems was anxiety, ranking ahead of bad colds or bronchitis.

One of the first studies using sampling techniques to estimate the distribution of fears and

phobias, among the general population, was undertaken by Agras, Sylvester, and Oliveau (1969). They conducted a probability sample of the household population of Burlington, Vermont in the United States and interviewed the 325 individuals who made up the sample. From this study, the estimated total prevalence of phobias was 7.7%, but 0.02% presented with phobias severe enough to result in an absence from work or the inability to manage common household tasks. The investigators diagnosed 0.06% of the sample, as having agoraphobia. Many more individuals, approaching 50% of the population, presented with mild fears of objects or situations.

Anxiety disorders are particularly prevalent in primary care settings such as community clinics and doctors surgeries. Spitzer et al. (1995) surveyed primary care settings and reported that 18% of patients in these settings reported either panic disorder, generalised anxiety disorder, or anxiety symptoms that approximated these disorders. These figures excluded the much larger phobia category. A World Health Organization study of mental disorders in primary care settings around the world, also found rates of approximately 10% for panic disorder with and without agoraphobia and generalised anxiety disorder (Sartorius, Ustun, Lecrubier, & Wittchen, 1996). Furthermore, it is important to note that certain patterns of physical symptoms presenting in primary care medical settings are highly associated with a subsequent diagnosis of panic disorder. For example, patients with chest pain and normal coronary arteries meet criteria for panic disorder approximately 40% of the time (Katon et al., 1988). Other physical symptoms that meet criteria for panic disorder upon further examination include palpitations (45% of the time), unexplained faintness (20%), irritable bowel syndrome (40%), and unexplained vertigo and dizziness (20%) (Roy-Byrne & Katon, 2000).

Anxiety disorders are furthermore strongly associated with chronic respiratory illness (Perna, Bertani, Polito, Columbo, & Bellodi, 1997), gastrointestinal symptoms, and vesicular abnormalities (Roy-Byrne & Katon, 2000). These patients with anxiety disorders seek out medical specialists in disproportionate numbers. Patients with generalised anxiety disorder most often end up seeing

gastroenterologists, whereas patients with panic disorder tend to see neurologists and otolaryngologists (Kennedy & Schwab, 1997).

Gender differences with regard to prevalence of anxiety have been observed. Women in the general population experience higher levels of anxiety and are more at risk than men for most anxiety disorders with the gender ratio estimated to be at least 2:1 (Craske, 1999). This prevalence emerges early in life (Barlow, 2002). Retrospective data indicated that by age 6, females were already twice as likely to have experienced an anxiety disorder than males (Lewinsohn, Gotlib, Lewinsohn, Seeley, & Allen, 1998). Pierce and Kirkpatrick (1992) have hypothesised a possible reason for this disparity in levels of anxiety. According to them, males typically obtain significant lower levels of anxiety on self-report measures owing to an under-reporting of their actual levels of anxiety. This is mainly due to greater social sanctions against such reporting amongst men.

Despite the differences, anxiety disorders for both genders tend to be chronic and to remain present in somewhat less severe form even if successfully treated (Noyes, Clancy, Hoenk, & Slymen, 1980; Roy-Byrne & Cowley, 1995; Yonkers, Warshaw, Massion, & Keller, 1996). The early study undertaken by Agras et al. (1969) found that phobias ran a prolonged course. Once an individual developed a phobia, the phobia remained in at least a mild form for a lifetime. The findings on the prolonged course of phobias were confirmed in a later follow-up study. Agras, Chapin, and Oliveau (1972) found little improvement in individuals with untreated phobias five years after the original study, particularly if the individuals were 20 years old or older and if their phobias were more generalised.

Marks and Lader (1973) reviewed a series of studies conducted in the 1950s and 1960s surveying the long-term course of anxiety and found that although some subjects showed some improvement over the course of time, the majority continued to be symptomatic following a chronic and recurrent course over many years. Keller and Baker (1992) reviewed a number of studies

completed since the 1970s suggesting similar findings. Noyes et al. (1980) followed 112 patients with anxiety disorders for four to nine years. Eighty-eight percent of this group continued to experience mild to moderate symptoms during this time period. Katschnig and Amering (1994) followed a sample of 220 patients with panic disorder for two to six years after completion of a course of pharmacological treatment. Although 31% recovered and retained their gains during the follow-up period, the remaining 69% demonstrated continued symptomatology over this period of time with 19% of the sample demonstrating a severe and chronic course.

Anxiety in the form of various anxiety disorders has a high prevalence and chronicity. It could be expected that anxiety would be associated with substantial costs to the individual and the health care system, not only in terms of money but also in lost productivity and reduction in quality of life. From the aforementioned it is evident that anxiety exists in society and has long-term consequences. Hence it would seem pertinent to gain understanding into the origins of anxiety, which are expounded in the next section.

2.5. Origins of Anxiety

The study of anxiety is underpinned by the traditions in the study of emotions where the experience of emotion is considered to be fundamentally a set of expressive behaviours, an integrated neurobiological response and a cognitive perception or appraisal (Barlow, 1988). As such, investigators orientated towards a particular tradition concentrated on one component or another, such as the behavioural, neurobiological, or cognitive aspects of emotion (Barlow, 1988). Examining the origin of anxiety not only provides valuable insight into its prevalence in society, but also how it develops within the individual. To this end, what follows is a brief discussion on the aforementioned components, which explain how anxiety arises.

2.5.1. Anxiety as Learnt Behaviour

Izard (1977) viewed anxiety as a hybrid or blend of a number of emotions with fear dominant in the blend. The basic emotions most commonly considered to combine with fear to make up anxiety include distress/sadness, anger, shame, guilt, and interest/excitement. Furthermore, anxiety, according to Izard's view, may assume a different blend across time and situations.

According to Izard (1977; Izard & Blumberg, 1985), the development of an anxious personality results from the interaction of learning with basic emotions resulting in stable affective-cognitive structures that are trait-like. These traits result from the recurring patterns of affective-cognitive interactions and are thought to account for the development of what can be termed as an anxious personality. Although fear is viewed as a basic innate emotion by Izard (1977), an anxious personality is seen for the most part as learned.

2.5.2. Anxiety as Biology

Gray and McNaughton (1996) proposed that personality and emotions are determined by three different affective-motivational systems. The primary system in their model is the behavioural inhibition system (BIS), which consists of the septal area, the hippocampus, and the Papez circuit. This system includes neocortical inputs to the septo-hippocampal system, dopaminergic ascending input to the prefrontal cortex, cholinergic ascending input to the septo-hippocampal system, noradrenergic input to the hypothalamus, and the descending noradrenergic fibers of the locus ceruleus. After specific stimulus input, the BIS suppresses ongoing behaviour and redirects attention toward the relevant stimuli. This is particularly true for signals of punishment, non-reward, and novelty (Gray & McNaughton, 1996). In Gary and McNaughton's view, an active and sensitive BIS that reacts to signals of novelty or punishment with exaggerated inhibition, is the biological basis of anxiety. A complementary system, involving the medial forebrain bundle, responds to signals of

rewards and non-punishment and facilitates the behavioural approach system. These two systems regulate much of the organism's behaviour.

A third system, the fight-flight system (FFS), responds to unconditioned punishment like pain and unconditioned frustrative non-reward by defensive aggression and/or unconditioned escape behaviour (Gray & McNaughton, 1996). The BIS and the FFS are seen as two fundamentally distinct but related systems. Anxiety is associated with the BIS and fear or panic with the FFS.

2.5.3. Anxiety as Cognition

Spielberger (1966) considered anxiety as a personality trait as evidenced in his state-trait conceptualisation. State anxiety is considered to be a transitory emotional state whereas the disposition to experience state anxiety frequently or to be anxiety-prone is considered a personality trait and termed trait anxiety (Spielberger & Rickhman in Sartorius et al., 1990). According to Spielberger's (1966) model, external stressors as well as internal stimuli are cognitively appraised in such a way as either to produce anxiety or not. In part, appraisal is a function of the level of trait anxiety.

Beck's cognitive approach advocates a different emphasis. Beck, Emery and Greenberg (1985) recognised emotions in general, and anxiety in particular, as complex biopsychosocial responses with important evolutionary, biological, affective, and cognitive components. The authors acknowledged that basic emotions are innate, survival-oriented responses to an environment that has changed greatly over the course of evolution. For example, they suggested that the behavioural expression and action set associated with fear, which was adaptive during the millennia when human beings were hunter-gatherers, may no longer be appropriate when threats and danger are primarily psychological rather than physical. They emphasised the importance of cognitive factors under conditions where emotions are inappropriate, exaggerated, or disordered. Their theorising is

largely confined to instances where danger is misperceived or exaggerated.

More specifically, the locus of the problem in the anxiety disorders is not in the affective system but in cognitive schemata where reality is interpreted as dangerous (Beck et al., 1985). Information about the self, the world, and the future is continually processed in a distorted way as dangerous. Consequently, states of anxiety are associated with automatic thoughts and images relevant to danger. For Beck et al. these automatic thoughts and images, resulting from distorted information processing, trigger inappropriate motor, physiological, and affective components of the anxiety response.

Examination of the components of emotion has added to the understanding of the origins of specific emotions such as anxiety and fear. Firstly, biological contributions expressed as part of our genetic make-up, seem to create a set of vulnerabilities that set the stage for the subsequent appearance of anxiety. Secondly, basic cognitive structures seem to represent a psychological vulnerability to experience anxiety and fear.

2.6. Conclusion

The main focus of this chapter was on the theory of anxiety. To obtain clarification on the concept of anxiety, the term was firstly defined and secondly differentiated from the terms fear and worry. Anxiety was defined as an “apprehensive anticipation of future danger or misfortune accompanied by a feeling of dysphoria or somatic symptoms of tension” (DSM-IV-TR, 2000, p. 820). Worry was described as a normal and adaptive process, which attempts to cope with future threat, whereas fear was defined as a response to a known, external and definite threat.

Anxiety can simultaneously hold both positive and negative outcomes for an individual and to clarify this paradox, a discussion of anxiety as both a motivator and destroyer was presented. An examination on the prevalence and course of anxiety followed and the chapter concluded with a

discussion on explanations giving rise to the phenomena of anxiety.

Each of the theoretical orientations describing the origin of anxiety, namely behavioural, biological or cognitive, relate anxiety to the personality. Although only briefly mentioned in this chapter, the construct of personality and its relationship with anxiety warrant further explanation to realise the aim and objectives of this study. To this end, the chapter that follows provides an overview of the relationship between anxiety and personality with specific emphasis on personality theories. One such personality theory is that of trait theory within which the term trait anxiety was coined.

Chapter 3

Anxiety and Personality

3.1. Chapter Preview

The previous chapter covered relevant theory related to anxiety. This chapter sets out to describe the relationship between anxiety and the domain of personality. It commences with a brief introduction to personality and will attempt to define the construct. Various personality strategies will be discussed with particular emphasis on the conceptualisation of anxiety as a component of personality. Emphasis will be given to the trait theorists with specific attention to the work of Raymond Cattell and the development of the Sixteen Personality Factor Questionnaire (16PF), as this measure will be employed in this study. The chapter will conclude by drawing a distinction between trait and state anxiety.

3.2. Introduction

An understanding of human personality and its disorders is crucial to our understanding of human behaviour. It is for this reason that the construct of personality has been formulated, reformulated and debated for centuries (Ehrenreich, 1997). It is noted by Frank (1939, in Murphy & Davidshofer, 1994) that “an initial difficulty in the study of personality is the lack of any clear-cut conception of what is to be studied” (p. 389). More recent theorists are of the opinion that the situation has not changed (Pervin, 1996). There still remains uncertainty over what personality is, over the usefulness of the term “personality,” and over the contribution of personal factors, as opposed to environmental factors, to the understanding of behaviour. In the next section, an attempt will be made to offer a workable definition of personality.

3.3. Definition of Personality

A definition of personality must take several facts into account. Firstly, individuals are unique in the sense that no two people are exactly alike in terms of temperament, behaviour or preferences. Secondly, individuals do not behave in identical ways in all situations. For example, the manner in which an individual behaves at work would differ from the way the same individual would behave at a birthday celebration. Thirdly, although individuals are unique and are not completely consistent across situations, there is significant commonality in human behaviour. Although there are great differences in detail, many people show similar patterns of behaviour. The description of broad personality types may allow us to meaningfully group individuals in a way that precisely describes some behaviour patterns (Murphy & Davidshofer, 1994).

In theory, there are two opposite positions that could be put forth to explain behaviour, the purely trait-oriented position and the purely situational position (Murphy & Davidshofer, 1994). The former concentrates solely on the person and ignores the situation in which behaviour occurs, whereas the latter ignores the person and concentrates solely on the situation. Neither position represents a fruitful or even adequate description of personality (Pervin, 1996). Hence the definitions of the term personality show little agreement. Various ideas about the structure of the personality have been put forward (Mischel, 1999). For example, personality theorists suggest that personality is:

“... the dynamic organization within the individual of those psychophysical systems that determine his characteristic behavior and thought” (Allport, 1961, p. 28).

“... a person’s unique pattern of traits” (Guilford, 1959, p. 5).

“...the most adequate conceptualization of a person’s behavior in all its detail” (McClelland, 1951, p. 69).

According to Meyer, Moore and Viljoen (2003), personality can be defined as the totality of all physical, psychological and spiritual characteristics that determine the behaviour of individuals. It is that which makes people as they are, namely that which allows us to make predictions about someone's behaviour. Schultz (1990) added a situational component and defined personality as the unique and relatively enduring internal and external aspects of an individual's character that influence behaviour in different situations. Different theorists however, have differing views about which precise characteristics determine the individual's behaviour. Vane and Guarnaccia (1989) stated that no matter what definition is used, most theorists would agree that personality involves contributions of heredity, environment and maturation. The relative contribution of each is, however, a major source of disagreement. Aiken (1997) has suggested that an acceptable compromise is to define personality as "a composite of cognitive abilities, interests, attitudes, temperament and other individual differences in thoughts, feelings and behaviour" (p. 266). As such, this definition is accepted by this study since personality is viewed a unique combination of cognitive and affective qualities describable in terms of a typical, fairly consistent pattern of individual behaviour.

Within definitions, theorists use certain structural concepts to explain how the person functions as a whole (Meyer et al., 2003). As such, they present theories regarding hypothetical basic units which make up the personality and which work together in some way to produce behaviour. Some of these theories and how they account for anxiety are discussed next. This discussion is structured according to Liebert and Spiegler's (1998) conceptual distinctions, namely, psychoanalytical, behavioural, phenomenological and dispositional theories. Insight regarding anxiety as a component of personality is considered necessary as this study makes use of a personality measure (Sixteen Personality Factor Questionnaire) to ascertain levels of anxiety.

3.4. Personality Theories and Anxiety

Theories pertaining to the origin, structure and dynamics of personality are continually developing and changing. The field of personality has had one of the longest histories of development in psychology. Some of the first theories of personality were already being formulated 2500 years ago (Merenda, 1999). More recent but still holding considerable sway, is the psychoanalytic theory originally formulated by Sigmund Freud.

3.4.1. Psychoanalytic Personality Theory

Freud held that personality consists of three parts, namely the id, ego and superego which function on three levels of consciousness, namely the conscious, preconscious and unconscious (Meyer et al., 2003). The id is a primitive pleasure-seeking impulse and the reservoir of biological drives. It seeks immediate gratification of needs. The ego is considered to be the rational self. It mediates between the pleasure demands of the id, the demands of reality and the moral limitations of the superego. The ego operates according to the reality principle, whereby the gratification of a need is delayed until an appropriate actual goal can be obtained. The third part of personality is the superego, which consists of the internalised values of society. It is the moral aspect of personality that guides the individual toward ideals. The resolution of conflict between the three parts plays a major role in the development of the individual's personality (Corey, 2001).

Conflict between the id's forbidden drives and the superego's moral codes give rise to anxiety. Freud described anxiety as the ego's reaction to danger. It is an uncomfortable feeling which motivates the ego to avoid the danger and thereby reduce the anxiety. Freud distinguished three types of anxiety, namely reality anxiety, neurotic (free floating) anxiety and moral anxiety (Freud, 1961).

Reality anxiety, which is equivalent to the current psychological understanding of "fear", is

anxiety about actual dangers in the external environment. Although reality anxiety or fear can be very intense and unpleasant, the individual is able to counteract the cause of fear. The individual may fight off, appease, or drive away the dangerous person, animal or thing, or they may flee from the situation (Moore et al., 2003).

Neurotic anxiety and moral anxiety differ from reality anxiety, as in these types of anxiety the threat comes from within and the origin of the anxiety is partially or wholly unconscious (Freud, 1961). According to Freud, neurotic anxiety and moral anxiety play an important role in all psychological disturbances (Kaplan & Sadock, 1998). These kinds of anxiety, however, also play an important role in the life of every normal human being but are regulated through defence mechanisms (Freud, 1961).

Although the psychoanalytic theory has made contributions to the field of psychotherapy, particularly with regard to understanding and dealing with unconscious conflicts and defence mechanisms, it has been criticised for its deterministic view of human behaviour. Theorists have therefore postulated other ideas on how personality relates to anxiety. One such theory stems from the behavioural school.

3.4.2. Behavioural Theory

Behavioural theory holds three main personality theories, namely, radical behavioural theory; social learning theory; and cognitive-behavioural theory. Radical behaviourists focus on overt behaviour that can be outwardly observed by others. Social learning and cognitive behaviourists study covert behaviour that is not always readily observed (Corey, 2001). The underlying premise to all the divisions within behavioural theory is that behaviour develops and changes primarily through learning and experience. As such, personality and anxiety is also considered in terms of learning theory.

Mowrer (1939) was one of the first to hypothesise anxiety as a conditioned response to perceived dangerous stimuli. A reduction in tension, pain, and discomfort is rewarding to the organism, and therefore behaviours that reduce anxiety are reinforced. Mowrer stated:

Anxiety, defined as the anticipation of painfully intense stimuli, appears to exercise an important influence in actually shaping human and infrahuman behaviour alike. Just as a reduction of hunger, thirst, sex drive, fatigue, oxygen, or any other organic need or discomfort tends to reinforce behaviour which brings about such a reduction or state of relief, so likewise is a reduction in the particular form of discomfort called anxiety effective in fixating behaviour that is associated therewith (p. 99).

Other behaviourists (e.g., Skinner, 1954) believe the primary drive of pain reduction is the basis for understanding anxiety. Since anxiety is associated with pain and discomfort (primary avoidance drives) the experience of anxiety itself becomes painful and discomforting (Corsini & Marsella, 1983). As with the psychoanalytic theory, this model has been criticised particularly for its lack of emphasis on more stable and enduring personality traits (Corey, 2001; Liebert & Spiegler, 1998). An alternative explanation of anxiety is given in the next section where the phenomenological theory is discussed.

3.4.3. Phenomenological Theory

Phenomenological theorists focus on an individual's subjective perceptions and experiences. The basic philosophy of this theory holds that individuals are continuously changing and developing as they move toward self-actualisation (Corey, 2001). Phenomenological theory considers personality to be an individual's holistic constellation of thoughts, feelings and behaviour, a constellation that is

active and continually evolving (Liebert & Spiegler, 1998). The phenomenological approach to personality has close ties with the existential movement in psychology. Rollo May, a prominent supporter of existential psychology, has pointed out that existential psychology is “an attitude, an approach to human beings, rather than a special school or group ... it is not a system of therapy but an attitude toward therapy, not a set of new techniques but a concern with the understanding of the structure of the human being and his experience” (1969, p. 245).

According to this approach, personal striving at survival, maintenance and assertion of one's being, gives rise to anxiety that must be confronted as an inevitable part of the human condition (Corey, 2001). Existentialists differentiate between normal and neurotic anxiety and view anxiety as a potential source of growth. Normal anxiety is an appropriate response to an event being faced. Furthermore, this kind of anxiety does not have to be repressed and it can be used as a motivation to change. Neurotic anxiety in contrast, is out of proportion to the situation. It is typically out of awareness and it tends to immobilise the person (May, 1981). Being psychologically healthy entails living with as little neurotic anxiety as possible, while accepting and struggling with normal anxiety that is a part of living (May & Yalom, 1995).

A constructive form of normal anxiety, existential anxiety, can be a stimulus for growth. As existential anxiety is experienced, the individual becomes increasingly aware of freedom and the consequences of accepting or rejecting that freedom. According to May (1981), freedom and anxiety are two sides of the same coin. Anxiety is related to the excitement accompanying the beginning of a new idea. Thus, anxiety is experienced when freedom is utilised to move out of the known into the realm of the unknown. However, out of fear individuals may avoid taking a leap into the unknown. As May pointed out:

We can escape the anxiety only by not venturing that is, by surrendering our

freedom. I am convinced that many people never become aware of their most creative ideas since their inspirations are blocked off by this anxiety before the ideas even reach the level of consciousness (p. 191).

Anxiety is thus viewed as something to be embraced and not avoided. It can be transformed into the energy needed for enduring the risks of experimenting with new behaviour. It follows that individuals experiencing too little anxiety may have low motivation for risk taking and consequently for change. As with the previous two models, the phenomenological approach has limitations and as with the behavioural approach, has been criticised for its lack of emphasis on enduring core personality traits (Corey, 2001). The dispositional theory discussed next has attempted to address this limitation.

3.4.4. Dispositional Theory

Dispositional theorists focus on natural personality dispositions where a disposition is defined as “an enduring, stable personality characteristic” (Liebert & Spiegler, 1998, p. 156). The basic philosophy underlying this approach is that individuals are predisposed to behave in certain ways based on the number and strength of dispositions possessed (Corey, 2001; Liebert & Spiegler, 1998). A major task of the dispositional strategy is to identify the most central dispositions on which people can be compared.

Dispositional theories classify people according to personality types or traits that are commonly referred to as type or trait approaches, respectively (Johnson, 1997). In type theories, the main emphasis is placed on classifying people into one or more categories or types, whereas trait theories focus on the degree of the personality characteristic exhibited (Liebert & Spiegler, 1998). Each of these dispositional approaches is discussed in the paragraphs that follow.

3.4.4.1. Type Theories of Personality

One of the oldest approaches to understanding personality is the notion of fixed categories or types of people (Aiken, 1997). Hippocrates, in the 5th century BC, postulated that personality could be described by clinically assessing the four cardinal body fluids or “humors” which indicated disposition or temperament. These four “humors” were blood, black bile, yellow bile and phlegm (Merenda, 1999). Hippocrates spoke of four types of personality that were said to derive from these body fluids: the choleric (hot tempered); the sanguine (confident); the melancholic (moody) and the phlegmatic (slow to act). In so doing, Hippocrates had formulated the first four-factor model of human personality. Since then several other personality theorists, such as Franz Joseph Gall, Emil Kraepelin, Ernst Kretschmer and William Sheldon followed in his footsteps with attempts to classify personality into types (Millon & Everly, 1985).

Kretschmer (1925) was the first personality theorist to attempt to establish a relationship between physique and personality. He believed that both a tall, thin body (asthenic) and a muscular body build (athletic) were associated with a tendency to withdraw (schizoid personality). A short, stout body (pyknic) on the other hand was believed to be associated with emotional instability (manic-depressives) (Aiken, 1997). Kretschmer extended this theory to study normal personality and body build. He demonstrated that tall and slender individuals tended to be more introverted, whereas heavier, rounder people tended to be more extroverted (Aiken, 1997; Merenda, 1999).

Sheldon, a follower of Kretschmer, proposed a related typology by identifying three basic morphological dimensions called somatotypes. These were endomorphy, characterised by a soft and round physical appearance; mesomorphy, characterised by a solid and muscular physical appearance; and ectomorphy, characterised by a fragile and lean physical appearance. These body types were related to temperaments, which had the potential to deteriorate into certain forms of

psychopathology (Millon & Everly, 1985).

A more recent type theory is the work of Carl Jung. His theory of personality typology provides a foundation for modern personality typology. Jung believed that the energy in the psyche is created by the power of opposing poles that have varying degrees of intensity for different individuals. A type preference implies a person's habitual and conscious preference for one pole rather than the other. The combinations and intensities of these preferences account for the differences between individual personality types (Moore et al., 2003).

3.4.4.2. Trait Theories of Personality

Johnson (1997) defined traits as consistent patterns of thoughts, feelings, or actions that distinguish people from one another. From this definition, it can be distinguished that traits can refer to thoughts, feelings, or behaviour. Secondly, trait attribution invariably involves comparisons between people. For example, if someone is said to be obsessive-compulsive, it appears as if the individual has more intrusive thoughts and guilt feelings and demonstrates more ritualistic behaviour than people in general. Thirdly, for traits to distinguish people from one another, they must display some distinctive consistency (i.e., as obsessive experiences and compulsive activities diminish to the point that they are no more frequent than those of the general population, then they would no longer distinguish an individual from people in general).

Trait theorists come from the premise that all human language contains terms that characterise personality traits. They define traits as enduring styles of thinking, feeling and acting and assume that individuals vary on a number of personality dimensions (Brunner-Struik, 2001). Personality is thus described by exploring, describing and classifying people according to the traits that they possess (Kline, 1993). Although the study of personality is not one and the same as the study of traits, the trait approach has provided much of the language and framework in describing

personality (Murphy & Davidshofer, 1998).

In the paragraphs that follow, a detailed discussion is presented on the work of a prominent trait theorists namely, Raymond Cattell. Attention is paid to his conceptualisation of traits with particular emphasis on the trait relating to anxiety (trait anxiety) and the formulation of the Sixteen Personality Factor Questionnaire (16PF). This is deemed necessary, as Cattell's formulation of personality and the resulting personality measure, is relevant to this study in the assessment of the trait anxiety.

3.5. Trait Formulation

Different trait theorists have approached the task of understanding personality from different perspectives. Gordon Allport is considered to be one of the most influential trait theorists (Craik, Hogan, & Wolfe, 1993). Allport regarded traits as the basic building blocks of psychological organisation, serving to integrate what would otherwise be dissimilar stimuli and responses. He defined traits as “neuropsychic structures having the capacity to render many stimuli functionally equivalent, and to initiate and guide equivalent forms of adaptive and expressive behaviour” (Allport, 1961, p. 347) or “generalised action tendencies” (Allport, 1966, p. 3).

Allport and Odbert (1936) conducted an influential lexical study of the personality-relevant terms in an unabridged English dictionary. They included all the terms that could be used to “distinguish the behaviour of one human being from that of another” (p. 24). Their complete list amounted to 17 953 trait-like words. They reduced this amount to a list of about 4500 trait adjectives by eliminating obscure words and close synonyms. They then organised the list into psychologically meaningful subsets (Allport & Odbert, 1936). Although their classifications provided some initial structure for the personality lexicon, it lacked practical value. It fell short of providing a systematic framework for distinguishing, ordering, and naming individual differences in

people's behaviour and experience (John, 1989). Raymond Cattell addressed this shortfall.

Aiming for taxonomical improvement, Cattell (1943) used Allport and Odbert's list as a starting point for his multidimensional model of personality structure. As the complete list was too lengthy for research purposes, Cattell (1943) began with the subset of 4500 trait terms. Using both semantic and empirical clustering procedures as well as his own reviews of the personality literature available at the time (John, 1990), Cattell reduced the 4500 trait terms to a mere 35 variables. That is, he eliminated more than 99% of the terms Allport had defended. Using this small set of variables, Cattell conducted several oblique factor analyses and identified 16 personality factors (traits), which eventually became part of his 16 Personality Factors Questionnaire (16PF) (Cattell, Eber, & Tatsuoka, 1992). See Appendix A for a listing of the 16 primary source traits.

Like Allport, Cattell (1965) adopted traits as the fundamental conceptual unit of personality but at the same time he classified traits in four ways. Namely, common versus unique; surface versus source; constitutional versus environmental mould; and dynamic (also called ergic traits or ergs) versus temperament. In his view, each kind of trait had its own pattern of correlational relationships among its component variables and the external situation. Common traits are characteristics of all people, whereas unique traits are peculiar to the individual. Surface traits are easily observed in behaviour, but source traits can only be discovered by the statistical procedure of factor analysis. Constitutional traits depend on heredity, while environmental mould traits depend on the environment. Lastly, dynamic traits motivate the person toward a goal and temperament traits relate to the emotional aspects of goal-directed activity (Aiken, 1997). Cattell believed that each personality is comprised of a relatively unique combination of these traits (Morris & Maisto, 1998). Furthermore, he attested that human behaviour is a complex phenomenon that involves the interdependency of different aspects of functioning. Personality ultimately involves all traits interacting with particular situations (Cattell, 1965). In similar fashion, a number of traits interact to

produce the individual's subjective experience of anxiety and give rise to the overt behavioural component. A discussion of these anxiety-producing traits follows.

3.5.1 Trait Anxiety

Cattell and Scheier (1961) pioneered the application of multivariate techniques to defining and measuring anxiety. Both phenomenological (self-report) and physiological measures of anxiety were included in their factor-analytic investigations of the covariation of different anxiety measures over time (Cattell, 1966). Through psychiatric observation and analyses, it was established that seven factors, namely, low Ego Strength (C-), low Boldness (H-), Emotional Sensitivity (I), Suspiciousness (L), Guilt Proneness (O), low Ability to Bind Anxiety (Q₃-), and Free-Floating Anxiety (Q₄) were considered manifestations of some form of anxiety (Cattell, 1966). Even more convincing was second order factoring of the 16PF, which revealed six of the seven factors belonging to the single second-order factor of Anxiety (QII). The Factor QII has also shown to retain its form and definition across cultures as well as across age levels (Cattell, 1966).

Factor QII is generally the most important indicator for psychopathology (Karson & O'Dell, 1976). Low QII scores are considered to be a highly desirable psychological condition in terms of emotional comfort. The Administrator's Manual for the 16PF (Institute for Personality and Ability Testing, 1986) stipulates, "People who score low on this factor tend to be those whose lives are generally satisfying, and those who are able to achieve those things that seem to them to be important" (p.26). Individuals who score low on Factor QII are typically associated to the following traits: Q₄- (relaxed and composed), O- (self-assured and complacent), C+ (in control of their emotions and tolerant of frustration), L- (secure and accepting), and Q₃+ (are maintaining socially approved self-images). In contrast, individuals scoring high on this factor are typically Q₄+ (tense

and frustrated), O+ (apprehensive and insecure), C- (affected by feelings and changeable), L+ (suspicious and jealous) and Q₃- (follows own rules and careless of social rules).

Cattell and Scheier (1961) further clarified the anxiety trait when they identified two distinct anxiety factors, which they labelled “trait anxiety” (TA) and “state anxiety” (SA). These factors were labelled on the basis of the procedures by which they were isolated. Relatively independent “state” and “trait” anxiety factors were consistently identified in this research. Measures that fluctuated over time and covaried over occasions of measurement had high loadings on the SA factor, whereas measures with high loadings on the TA factor were relatively stable over time. Thus, the TA factor was defined in terms of individual differences in relatively permanent personality characteristics. Although many of the same variables loaded on Cattell’s (1966) state and trait anxiety factors, the pattern of loadings was quite different. Physiological variables, such as respiration rate and systolic blood pressure that fluctuated over time, had strong loadings on the SA factor but only slight loadings on TA. Variables loading on the relatively stable TA factor included personality characteristics such as “ego weakness,” “guilt proneness,” and a “tendency to embarrassment” (p. 57).

In line with Cattell and Scheier, Spielberger (1975) distinguished between state and trait anxiety. Spielberger (1975) described state anxiety as follows:

State anxiety may be conceptualised as a transitory emotional state or condition of the human organism that varies in intensity and fluctuates over time. This condition is characterized by subjective, consciously perceived feelings of tension and apprehension, and activation of the autonomic nervous system (p. 137).

SA is thus defined in terms of observable behaviours, physiological events, and cognitive symptoms. TA is however described as follows:

Trait anxiety refers to relatively stable individual differences in anxiety proneness, that is, to differences in the disposition to perceive a wide range of stimulus situations as dangerous or threatening, and in the tendency to respond to such threats with A-State reactions. A-Trait may also be regarded as reflecting individual differences in the frequency and intensity which A-States have been manifested in the past, and in the probability that such states will be experienced in the future, (Spielberger, 1975, p. 137).

TA thus refers to individual differences in anxiety proneness and is seen as a relatively stable personality trait (Spielberger, Pollans & Worden, 1984). It is not directly manifested in behaviour, but may be inferred from the frequency that a person experiences elevation in SA over time. Persons high in TA are more vulnerable to stress and respond to a wider range of situations as dangerous or threatening. Like Freud, Spielberger (1975) relied on the psychodynamic concept of stress or psychological threat to specify the conditions under which the propensity to experience unobservable anxiety will produce observable SA, and provided a psychodynamic specification of when TA leads to SA (Reiss, 1997). For the purpose of this study, Cattell and Scheier's (1961) definitions of state and trait anxiety, as further clarified by Spielberger (1975), are accepted.

3.6. Conclusion

This chapter commenced with a brief introduction to personality and defined the construct. Various personality strategies have been discussed with particular focus on the conceptualisation of anxiety as a component of personality. Emphasis was given to the trait theorists with particular

attention to the work of Raymond Cattell and the development of the Sixteen Personality Factor Questionnaire (16PF) as a measure of anxiety. The chapter concluded with drawing a distinction between the two distinct anxiety factors identified by Cattell and Scheier (1961), namely trait and state anxiety.

This chapter has shown how the personality variable of trait anxiety has been conceptualised by the original authors and been further developed by Spielberger. Trait anxiety's construct validity has not come into question but related constructs have been subjected to much debate. One such construct is that of anxiety sensitivity (AS). A debate has raged in literature about the construct of anxiety sensitivity and its relationship to the construct of trait anxiety. The chapter that follows will discuss the construct of anxiety sensitivity and the debate surrounding its relationship to trait anxiety.

Chapter 4

Anxiety Sensitivity and Trait Anxiety

4.1. Chapter Preview

This chapter introduces the construct of anxiety sensitivity and briefly discusses competing theories on the possible origins of the fear of anxiety (i.e., anxiety sensitivity). Particular emphasis is placed on the expectancy theory which gives rise to the anxiety sensitivity construct. The theoretical underpinning of anxiety sensitivity is elaborated together with possible psychopathological correlates. Debate exists surrounding the relationship between anxiety sensitivity and trait anxiety, as introduced in the previous chapter. This issue is addressed in the final section of this chapter and sets the stage for Chapter 5 which highlights the empirical research process in this study.

4.2. Introduction

According to the expectancy model of fear and anxiety proposed by Reiss and McNally (1985; Reiss, 1991), anxiety sensitivity (AS) is defined as the fear of anxiety-related bodily sensations arising from beliefs that these sensations have harmful consequences - specifically negative somatic, psychological, or social consequences (Reiss, 1991; Stewart, Taylor & Baker, 1997). For example, a person with high AS might fear heart palpitations believing they suggest a heart attack, or fear dizziness believing it to signify insanity. In contrast, a person low in AS would perceive such sensations to be transient and unpleasant, but otherwise harmless consequences of being in an anxious state. The explanation for these individual differences has occupied theorists and researchers at least since the writings of Freud (Reiss, 1991). Theories regarding the nature and etiology of the fear of anxiety (i.e., the fear of one's own anxiety and anxiety-related symptoms)

offer some, though at times conflicting, explanations for these individual differences (Lilienfeld, Turner & Jacob, 1993).

Following is a brief discussion on the origins of the fear of anxiety as put forward by the psychoanalytic, behavioural, existential and cognitive perspectives. In the aforementioned definition, AS and fear of anxiety are viewed as synonymous and as such, the discussion that follows is deemed necessary in an attempt to understand the formulation of AS (Williams, Chambless & Ahrens, 1997).

4.3. Origins of Fear of Anxiety

Just as people vary in their proneness to experience anxiety symptoms, they also vary in their perception of these symptoms. Most people would regard anxiety as merely unpleasant, whereas others may consider it with dread. Fear of anxiety has implications for clinical psychology and as such, various theorists have hypothesised the origin of this fear. Each of the most prominent theories will be briefly discussed in the following sections, starting with the psychoanalytic theories.

4.3.1. Psychoanalytic Theory

Freud proposed that the fear of anxiety is a symptom of agoraphobia. He (cited in Reiss, 1987) stated that, “In the case of agoraphobia, etc., we often find the resolution of a state of panic, and what the patient actually fears is a repetition of such an attack under those special conditions in which he believes he cannot escape it” (p. 131). Today, the association between agoraphobia and the fear of anxiety is a generally accepted principle supported by both numerous clinical observations and recent research findings (Cox et al., 1999).

Fenichel (1945) also offered a psychoanalytic view of the fear of anxiety. He proposed that:

In the first stages, the neurosis may be complicated by a secondary traumatic neurosis, induced by the first anxiety spell which is experienced as a trauma. Many anxiety hysterias develop out of such an experience, a fear of anxiety, and simultaneously a readiness to become frightened very easily, which may create a vicious circle (p. 210).

Fenichel (1945) explained the fear of anxiety in terms of the psychoanalytic theory of phobia. Phobia represents a defensive process in which anxiety caused by unconscious conflict is focused onto an external object. The psychic gain of fearing an external object is that the true inner source of the fear is disguised. In the fear of anxiety, the individual focuses on the symptoms of anxiety and does not focus on the unconscious Oedipal conflict (Fenichel, 1945). He indicated that this particular defence - the conscious focusing on the symptoms of anxiety could produce anxiety when the individual is in a “dammed-up” state of tension (p. 210).

Despite the long-standing conception of the fear of anxiety within psychoanalytic theory, various other proposals on the fear of anxiety have been put forward. One such proposal is that of the behavioural theory discussed in the next section.

4.3.2. Behavioural Theory

Eysenck (1968, 1985) made attempts to explain the fear of anxiety from a behavioural perspective. He invoked the concept of incubation to explain how anxiety can increase over time, even with repeated presentations of the nonreinforced conditioned stimulus (CS). According to Eysenck, if the CS is sufficiently aversive, the conditioned response (CR) can itself reinforce the CS or strengthen the unconditioned stimulus (UCS), leading to a positive feedback cycle in which anxiety escalates over time even in the absence of CS reinforcement (1985). Eysenck hypothesised

that incubation effects should be most pronounced in individuals with elevated neuroticism, introversion, or both, because such individuals would presumably be most likely to exhibit strong unconditioned responses to aversive stimuli. Although Eysenck's incubation theory has been criticised because of its lack of convincing empirical support (e.g., Mineka, 1979; Wolpe, 1979), it provided one of the first links between the fear of anxiety and individual differences in personality variables.

Goldstein and Chambless (1978) argued that "fear of fear" is a consequence of interoceptive classical conditioning of internal physical sensations (e.g., rapid heart beat, dizziness), which can then become a CS for the CR of anxiety and in some cases, panic attacks. The fear of fear is thus typically a consequence, not a cause, of panic attacks. Despite its substantial heuristic value for the treatment of anxiety disorders, Goldstein and Chambless's theory has been criticised on the grounds that it lacks strong empirical support and that it does not clearly distinguish between CS and CR, or between UCS and UCR (McNally, 1990).

4.3.3. Existential Theory

Frankl (1975) proposed that the occurrence of pathologic symptoms produces anticipatory anxiety or a fearful expectation that the symptoms might reoccur. For example, the experience of anxiety could cause some people to blush and other people to stutter. Frankl held that people who have had such experiences sometimes worry about the possibility of blushing or stuttering under embarrassing or even humiliating circumstances. Since worrying about pathologic symptoms produces anxiety, there is a tendency for worrying about pathologic symptoms to produce the very anxiety-related symptoms that the person fears might reoccur (Frankl, 1975). As such, Frankl's concept of anticipatory anxiety implies a self-sustaining, vicious circle. A symptom evokes a fear that the symptom will recur. The fearful expectation provokes the symptom and the recurrence of

the symptom reinforces the fearful expectation. Frankl developed clinical techniques designed to treat anticipatory anxiety by reducing the client's worry about the recurrence of pathologic symptoms. One weakness in Frankl's theory is its vagueness concerning the origin of these pathologic symptoms (Reiss, 1987).

4.3.4. Cognitive Theory

Cognitive theorists have argued that catastrophic misinterpretation of certain unexpected physical sensations, particularly those that can be exacerbated by anxiety (e.g., rapid heart beat), can lead to panic attacks (Beck et al., 1985; Clark, 1986). Specifically, these misinterpretations can lead to anxiety that can in turn worsen the very sensations that triggered the misinterpretations (Clark, 1986). In predisposed individuals, this positive feedback cycle can escalate, culminating in a panic attack. The cognitive model has been criticized on the basis of findings that panic attacks often occur during sleep and that many panic disorder patients do not report catastrophic cognitions prior to or during their attacks (Barlow, 2002).

In light of the criticisms levelled at the aforementioned theories, the construct of anxiety sensitivity (AS) has emerged as a potential explanation for the fear of anxiety (Reiss, 1999; Reiss & McNally, 1985; Reiss, Peterson, Gursky, & McNally, 1986). The construct is rooted in cognitive theory, especially the expectancy theory that is expounded in the sections that follow.

4.3.4.1. Expectancy Theory

Reiss and McNally (1985; Reiss, 1987, 1991, 1999) developed the expectancy model of anxiety to explain individual differences in fear acquisition and maintenance. This theory holds that human motivation to avoid a feared object is a function of two classes of variables, namely expectations and sensitivities. Expectations refer to what the person thinks will happen when the feared

object/situation is encountered (e.g., “I expect the plane will crash”, “I expect to have a panic attack during the flight”, “I expect other people will notice my fear of flying”) (Reiss, 1991, p.142). Sensitivities (fundamental fears) refer to the reasons a person holds for fearing the anticipated event (e.g., “I can’t stand the thought of being handicapped”, “Panic attacks cause heart attacks”) (Reiss, 1991, p.142).

Sensitivities differ from common fears in that the former are fears of inherently harmful stimuli and since other fears can be logically reduced to them (Reiss, 1999). Sensitivities “provide reasons for fearing a wide range of stimuli, whereas ordinary fears do not have this characteristic” (Reiss, 1991, p. 147). Fear of snakes, for example, may arise from traumatic conditioning where the fear of injury/illness is paired with snakes. Fear of snakes can also be amplified if the individual is frightened of feeling anxious, or if they are worried about being ridiculed for having such an “irrational” fear (fear of negative evaluation).

Sensitivities contain behavioural-affective components (subjective fear and avoidance motivation) and a cognitive component (catastrophic beliefs about the consequences of anxiety, disapproval, or illness/injury) (Reiss, 1999). This is consistent with the view that fears are composed of cognitive, behavioural, and affective components (Lang, Davis & Öhman, 2000). Reiss (1999) postulated that panic attacks, phobias, and other anxiety reactions arise from three sensitivities: fear of negative evaluation, AS, and injury/illness sensitivity. AS is the fear of anxiety symptoms (e.g., palpitations, breathlessness), which arises from beliefs that anxiety has harmful consequences. Fear of negative evaluation refers to apprehension and distress about receiving negative evaluations from others and is associated with beliefs that one will be negatively evaluated. Injury/illness sensitivity refers to fears of injury, illness, and death (Reiss, 1999).

Reiss’s theory proposes that there are broad individual differences in sensitivities and that danger and anxiety expectancies are situation-specific factors, whereas anxiety sensitivity is a person-

specific factor (Reiss & McNally, 1985). Theoretically, expectations and sensitivities together provide the key to understanding human fears.

Consistent with the cognitive theories, AS is posited to involve cognitive misappraisal. Misinterpretations of bodily sensations leads to a vicious cycle in which faulty interpretations leads to more anxiety (Schmidt, Lerew & Joiner, 1998). AS is however distinguished from other cognitive conceptualisations as it is believed to be a stable trait-like characteristic (Taylor, 1999). Individual differences in AS are hypothesised to emerge from a variety of experiences that ultimately lead to the acquisition of beliefs about the potentially aversive consequences of arousal. AS is thought to be acquired through a variety of mechanisms including the experience of panic (Goldstein & Chambless, 1978); observational learning; cognitive learning (Watt, Stewart, & Cox, 1998); biological constitution (Stein, Lang, Livesley, 1999); and personality needs to avoid illness, embarrassment, or to maintain control (Reiss & McNally, 1985).

In the previous chapter, a personality trait was defined as a stable, individual difference in behaviour. Individuals should therefore show relatively stable levels of AS over a period of time for AS to be viewed as a personality trait. McAdams (1994) has indicated that the most reliable personality trait measures exhibit test-retest correlation coefficients of .85. over a period of a few months. Maller and Reiss (1992) have provided the longest assessment interval to date of the test-retest reliability of the Anxiety Sensitivity Index (ASI) and found a coefficient of $r = .71$ over a three-year time period. This finding supports the hypothesis that an individual's degree of AS is sufficiently stable over time for the concept of anxiety sensitivity to be considered a personality variable (Maller & Reiss, 1992). As the ASI is used to ascertain levels of AS and the resultant scores are used for clinical and research purposes, the ASI and its structure warrant further exploration. The ASI as a measure of AS is set out in the next chapter on research design and methodology.

In summary, the construct of AS denotes individual differences in the perception of anxiety but more specifically, refers to fears of anxiety symptoms that are based on beliefs that these symptoms have harmful consequences. It is further viewed a predisposing personality trait in the development of anxiety disorders (Cox, Fuentes, Borger & Taylor, 2001). The relationship between AS and psychopathology is outlined in the next section.

4.4. Anxiety Sensitivity and Psychopathology

At least three assumptions are made in AS theory and research: (a) it concerns anxiety-related sensations, (b) it refers to a belief system, and (c) it is a predisposition rather than a correlate of panic attacks and panic disorder (Cox et al., 1999). In regard to clinical phenomena, Reiss (1991) related AS to problems such as insomnia, some types of substance abuse, posttraumatic stress disorder, and other stress-related illnesses (Cox et al., 1999). AS could thus serve as a useful construct for understanding several forms of psychopathology, as demonstrated in the following sections.

4.4.1. Anxiety Sensitivity and Panic Disorder

Results from several studies demonstrate a link between AS and both panic attacks and panic disorder. Taylor, Koch, and McNally (1992) found that panic disorder patients scored significantly higher on the ASI compared with patients with other anxiety disorders. AS was found to be the strongest predictor of panic disorder patients' success in discontinuing alprazolam medication and maintaining abstinence, regardless of whether they also received cognitive therapy (Bruce, Spiegel, Gregg, & Nuzzarello, 1995). It has also been shown that AS mediates responses to panic provocation procedures in individuals without a prior history of panic attacks. In addition, AS has also been found to distinguish nonclinical panickers (i.e., people who have panic attacks but not panic disorder) from people who have never had a panic attack (Norton, Cox, & Malan, 1992).

Reiss's (1991) emphasis on the clinical importance of AS is consistent with the criteria for panic disorder described in the current version of the DSM-IV-TR (2000). The diagnostic criteria are not based on the frequency or severity of panic attacks but rather on the fear of panic that arises from the person's beliefs about the implications or consequences of panic attacks. In other words, the DSM-IV-TR (2000) emphasises the fear of anxiety rather than the presence of anxiety.

4.4.2. Anxiety Sensitivity and Posttraumatic Stress Disorder

Research suggests that AS is elevated in Posttraumatic Stress Disorder (PTSD). Taylor et al. (1992) found that the mean ASI scores for PTSD are similar to those obtained in panic disorder. They speculated that this relation could be due in part to the phenomenological similarity between panic attacks and flashbacks, which are a feature of PTSD (Taylor et al., 1992). An examination of the item responses of PTSD patients and panic disorder patients reported in the Taylor et al. study, revealed a different pattern of ASI responding in PTSD (Cox et al., 1999). Whereas cardiorespiratory fears seem to be relevant for panic disorder patients, there was a trend for PTSD patients to score higher on items that contain fear of psychological sensations (e.g., "When I cannot keep my mind on a task, I worry that I might be going crazy," "It scares me when I am unable to keep my mind on a task").

4.4.3. Anxiety Sensitivity and Social Phobia

There is evidence that ASI scores are elevated in social phobia, with scores approaching or even exceeding those of panic disorder. Hazen, Walker and Stein (1995) compared ASI item scores in patients with either panic disorder or social phobia. The results suggested that a different form of ASI responding is operating in social phobia compared with panic disorder. Compared with panic disorder patients, social phobia patients had significantly higher scores on three items (i.e., "It is

important to me not to appear nervous,” “It embarrasses me when my stomach growls,” and “Other people notice when I feel shaky”). In contrast, panic disorder patients scored significantly higher mainly on those items referring to cardiorespiratory and other physical sensations. The contents of the three items most relevant for social phobia patients appear to come close to assessing fear of negative evaluation - a proposed fundamental fear that is distinct from AS both theoretically (e.g., Reiss & McNally, 1985) and empirically (Taylor, 1993).

A fear of anxiety symptoms can conceivably be elevated in both social phobia and panic disorder. In social phobia, individuals may fear publicly observable anxiety symptoms (e.g., sweating, blushing, trembling) if they believe these symptoms have harmful social consequences. In panic disorder, as discussed earlier, individuals are more likely to fear cardiac and respiratory anxiety symptoms and believe that these symptoms have harmful physical consequences (Cox et al., 1999).

4.4.4. Anxiety Sensitivity and Depression

With regard to AS and depression, Otto, Pollack, Fava, Uccello and Rosenbaum (1995) found elevated ASI scores in depressed subjects even if subjects were without a comorbid anxiety disorder. Scores were found to be similar to those obtained in social phobia. Depressed patients with a comorbid anxiety disorder had even higher ASI scores. Taylor, Koch, Woody, and McLean (1996) replicated these observations. They also attempted to identify the mechanisms responsible for this elevation by conducting a factor analysis of the ASI in a sample of patients with major depression and/or panic disorder. The analysis yielded a three-factor solution similar to those found in factor analytic studies of AS in other types of samples: fear of publicly observable symptoms, fear of cognitive dyscontrol and fear of somatic sensations. Fear of cognitive dyscontrol showed strong associations with measures of depression severity, but not with measures of anxiety severity.

The reverse was true for fear of publicly observable symptoms and fear of somatic sensations. Furthermore, a diagnosis of major depression was associated with the highest scores on fear of cognitive dyscontrol (Taylor et al., 1996).

Other research has shown that the ASI predicts depressed mood in nonclinical individuals. Schmidt, Lerew, and Jackson's (1997) prospective study found that in addition to predicting the occurrence of panic attacks, the ASI was also a significant predictor of scores on the Beck Depression Inventory (BDI). Catanzaro (1993) also provided evidence that the ASI is associated with depressed mood. He found that an interaction between the ASI and a measure of negative mood regulation expectancy was a significant predictor of BDI scores. Individuals with high levels of anxiety sensitivity and weak beliefs in their ability to regulate negative moods reported the most emotional distress (Catanzaro, 1993).

4.4.5. Low Levels of Anxiety Sensitivity

By definition, subjects who score at least one standard deviation below the mean on the ASI represent an extreme group. It is possible that like anxiety, the relation between AS and abnormal functioning may be curvilinear (Cox et al., 1999) That is, a moderate amount of AS could be more optimal than having little AS. To illustrate, in a study of people classified as having low, medium or high AS, Shostak and Peterson (1990) examined physiological arousal and subjective anxiety following an anxiety-inducing task (mental arithmetic). High AS subjects reported more anxiety symptoms compared with low AS subjects following the task. However, the low AS subjects did show some increases in subjective anxiety and "low ASs reported an increase in anxious mood without the perception of much, if any, physiological anxiety symptoms change even though low AS individuals showed the same level of physiological arousal to the mental challenge as did all AS groups" (Shostak & Peterson, 1990, p. 518).

Based on this finding, Shostak and Peterson (1990) concluded that “low anxiety sensitivity individuals appeared not just to be a good contrast group to demonstrate high sensitivity effects but, in fact, appeared to be an extreme group that behaves differently than average AS individuals” (p. 520). Shostak and Peterson speculated that low AS may even relate to antisocial personality disorder. People with this disorder may not regard physiological arousal as aversive. This together with poor moral development may result in failure to inhibit antisocial behaviour.

In a college student study, Werhun and Cox (1999) investigated the relationship between ASI responses in relation to self-deception and repression. Their findings support that of Shostak and Peterson (1990). They found that extremely low levels of AS may represent maladaptive functioning and these individuals could be at risk for problems other than distress disorders (i.e., other than anxiety and depression). The contention that low AS may be maladaptive, is also supported by a recent study of drug choice in relation to levels of AS in individuals seeking treatment for substance abuse (Norton et al., 1997). Norton et al. found that, although high ASI scores were associated with a preference for alcohol, men who scored low on the ASI were significantly more likely to prefer marijuana.

A reasonable speculation concerning low AS is that some people truly have low AS whereas for other individuals with apparently low AS, there is a strong self-deception or repression element at work. Given a sufficient stressor, low AS subjects with the latter characteristics may be at greater risk for psychopathology (Cox et al., 1999).

4.4.6. Treatment Implications

Anxiety sensitivity appears to be amenable to change, as measured on the ASI. Results suggest that the ASI is sensitive to clinical improvement. There is evidence for reductions in ASI scores across cognitive-behavioural treatment of panic disorder. Based on a weighted average of treated subjects from numerous studies, ASI scores drop an average of 14 points following short-term

therapist-directed cognitive-behavioural treatment (CBT) (Gould, Clum, & Shapiro, 1993; Hazen, Walker, & Eldridge, 1996; Shear, Pilkonis, Cloitre, & Leon, 1994). Likewise, there is initial evidence that AS in nonclinical samples can be effectively reduced with a brief (three-session) cognitive-behavioural intervention (Harrington, Telch, Abplanalp, & Hamilton, 1995).

Although cognitive-behavioural treatment is often promoted as the treatment of choice, anxiety sensitivity, as measured on the ASI, appears to decrease with successful treatment regardless of the treatment mode (Telch et al., 1993). Treatment does however not always return patients to ASI scores in the normal range (Saviotti et al., 1991). Attention to elevated scores in patients who have completed acute treatment appears especially important given the ability of measures of fears of anxiety sensations to predict long-term treatment outcome (Ehlers, 1993).

Despite the aforementioned research findings, AS as an important psychological phenomenon has not gone unchallenged. As data mounts in favour of AS existing as a valid construct, some authors have indicated that “anxiety sensitivity is simply trait anxiety” (Reiss, 1997, p. 207). This debate warrants further discussion and is outlined on the paragraphs that follow.

4.5. Anxiety Sensitivity and Trait Anxiety Debate

Following the first wave of studies on AS, critics questioned whether anxiety sensitivity was distinguishable from trait anxiety. In support of AS, Holloway and McNally (1987) reported the results of an experiment in which normal subjects engaged in five minutes of voluntary hyperventilation. Subjects were subdivided according to their scores on the ASI. Holloway and McNally found that high anxiety sensitivity subjects reported higher subjective anxiety and more frequent and intense hyperventilatory sensations on a self-report checklist than did low anxiety sensitivity subjects. The authors argued that these results provide support for the construct validity of the ASI and thus for the construct of anxiety sensitivity.

A critical assertion made by Holloway and McNally (1987) is that “anxiety sensitivity is a dispositional construct distinct from trait anxiety” (p. 330). In response to this statement, Lilienfeld, Jacob, and Turner (1989) questioned the conceptual and empirical distinction between trait anxiety and anxiety sensitivity and suggested that results attributed to anxiety sensitivity are more parsimoniously explained by trait anxiety. Lilienfeld et al. asserted, “Until more stringent tests of the ASI’s construct validity are conducted, the scientific status of the construct of anxiety sensitivity will remain less than convincing” (p. 102). In a rebuttal, McNally (1989) concluded “Perhaps this article and that of Lilienfeld et al. (1989) will stimulate further work on the fear of anxiety and its role in psychopathology” (1989, p. 194).

Since the original assertions, there has been considerable discussion regarding the degree to which AS is distinct from TA (McWilliams & Cox, 2001). Existing research has been used both to support the distinction between the two constructs (McNally, 1996) and to argue against such distinction (Lilienfeld et al., 1996). The debate was continued in two consecutive chapters of a monograph titled “Current Controversies in the Anxiety Disorders” edited by Rapee (1996). McNally substantiated his position in a chapter titled “Anxiety Sensitivity is Distinguishable from Trait Anxiety”. Lilienfeld defended his position in a chapter “Anxiety Sensitivity is Not Distinct from Trait Anxiety”.

According to Reiss (1997) the correlations between the ASI and measures of trait anxiety are not sufficiently high to support the hypothesis of identical constructs. Reiss (1991) summarised data from 11 samples in which the ASI had been correlated with measures of trait anxiety. The *r*-squares (common variance) ranged from 0 to a high of 36% of the variance. Peterson and Reiss (1992) sum up the position, “These numbers are nowhere near the levels needed to support the hypothesis that anxiety sensitivity is trait anxiety” (p. 20). In addition to this, Taylor et al. (1991) surveyed five correlations between measures of TA and AS and found them to range from .07 to .55

with a median correlation of .46. The *r*-squared value of the median correlation indicates that the measures of TA and AS typically share 21% common variance. These correlations have been characterised as “modest” (McNally, 1999, p.10) and are viewed as evidence that TA and AS may be related, but distinct constructs.

The principal operationalisation of TA and AS used in the noted correlational analyses have been the State-Trait Anxiety Inventory (STAI-T; Spielberger, 1983) and ASI (Reiss et al., 1986), respectively. Reiss (1997) questioned the validity of current TA measures, such as the STAI-T, and noted that they assess a number of symptoms, such as depression and lack of confidence, which are not anxiety-specific. Consistent with Reiss’s criticism, Bieling, Antony, and Swinson (1998) provided evidence that the STAI-T can best be conceptualised as assessing general negative affect rather than TA. They used a series of factor analytic procedures and correlation analyses to evaluate the STAI-T and found that it is comprised of both an anxiety factor and a depression factor. This weakness of the STAI-T would likely have compromised the accurate assessment of the variance shared between AS and TA.

Reiss (1997) elaborated on the distinction between the constructs by stating that TA and AS use different indicators to predict future anxiety or fear. According to Reiss, TA predicts future anxiety based on anxiety experiences of the past whereas AS predicts future fearfulness regardless of the frequency or the intensity of anxiety experiences in the past. Since past experiences of anxiety and beliefs about the consequences of anxiety are different phenomena, Reiss (1997) suggested that TA and AS are different constructs. In concurring with Reiss (1997), Spielberger (1985) as discussed in the previous chapter, held the view that the frequency and intensity at which anxiety states have been experienced in the past, provide the basis for predicting the probability that (state) anxiety reactions will be manifested in future.

Reiss (1997) is of the opinion that when Lilienfeld et al’s (1993) criticisms of AS were

successfully answered (McNally, 1989, 1996; Taylor, 1996), these theorists changed course by advancing a structural hypothesis rather than holding to the idea that the constructs of TA and AS are unrelated. Specifically, they suggested that anxiety sensitivity is one of three first-order factors nested within the second-order factor of trait anxiety. The other first-order factors are injury sensitivity and fear of negative evaluation (Lilienfeld et al., 1993). The latter first-order factors are in fact ideas developed by Reiss (1991) as part of his expectancy theory.

Several years after Lilienfeld et al.'s (1993) initial assertions about the relationship between trait anxiety and anxiety sensitivity, it appears that the evidence for the ASI's construct validity, as well as for Reiss et al.'s (1986) conceptualisation of the AS construct, is somewhat stronger than it was when criticism was first made. Specifically, there now appears to be support for the contention that a number of the findings of AS research cannot be entirely accounted for by trait anxiety, although several negative findings suggest that this issue is not entirely closed (Lilienfeld et al., 1996). It appears pertinent that the relationship between the constructs of TA and AS receive further exploration. The present research was undertaken in an attempt to promote understanding of such a relationship.

4.6. Conclusion

This chapter introduced the construct of anxiety sensitivity and discussed competing theories on the possible origins of the fear of anxiety with particular emphasis on the expectancy theory which gives rise to the anxiety sensitivity construct. Possible psychopathological correlates with AS were expounded together with treatment implications. The debate surrounding the relationship between anxiety sensitivity and trait anxiety was discussed and raised the need for further research. The research method and design undertaken by this study together with the empirical findings are presented in the subsequent chapters.

Chapter 5

Research Design and Methodology

5.1. Chapter Preview

This chapter presents a description of the research design and the methodology employed in this study. The aim of the research is given and the primary objectives outlined. A description of the participants and the sampling procedure is provided together with a brief description of the measures used to gather the data. Finally, statistical analysis and ethical considerations are discussed.

5.2. Aim and Objectives of the Research

The aim of this study was to explore and describe the relationship between trait anxiety and anxiety sensitivity.

In order to accomplish this aim, the following objectives were identified:

1. Describe the scores of the sample on the Anxiety Sensitivity Index (ASI) and the factors of the Sixteen Personality Factor Questionnaire (16PF) that tap trait anxiety, namely: Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q₃ (ability to bind anxiety) and the second-order factor QII (anxiety).
2. Explore and describe possible gender differences for scores on the ASI and the factors Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q₃ (ability to bind anxiety) and the second-order factor QII (anxiety) of the 16PF.
3. Explore and describe the relationship between scores of the ASI and the second-order factor QII (anxiety) scores of the 16PF.

4. Establish the degree of relationship between the ASI scores and the scores of the 16PF that tap trait anxiety namely: Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness) and Q₃ (ability to bind anxiety).

5.3. Research Design and Methodology

This study falls within the sphere of quantitative research where quantitative research can be defined as a formal, objective, systematic process in which numerical data are utilised to obtain information about the world, (Elmes, Kantowitz & Roediger, 2003). Quantitative research differs from qualitative research in that data is structured in the form of numbers or immediately converted into numerical values. Qualitative research on the other hand, uses data that is principally verbal in nature. Advantages associated with quantitative research are that the results may be generalised and that the researcher can remain more detached and, therefore, more objective (De Vos, 1998).

In an attempt to quantify data, studies can either be descriptive or experimental in nature. True experimental designs aim to investigate possible cause and effect relationships by manipulating an independent variable across various situations. Descriptive studies on the other hand make no attempt to alter behaviour or conditions (Hopkins, 2001). An exploratory-descriptive design was employed in this study to describe trait anxiety and anxiety sensitivity levels within the sample group. This form of research has an investigatory focus and has as its goal the careful mapping out of a situation in order to describe what is happening behaviourally (Rosenthal & Rosnow, 1991). The focus does not directly concern itself with causal explanations but rather careful descriptions of the observations. Although results obtained from quantitative research may be generalised, this will not be the case in this study, given the exploratory-descriptive nature of the study.

An exploratory design aims to gather new data and to establish whether patterns are apparent. In this study, the general aim involved gathering information about ASI scores in a South African

context and exploring the relationship between these scores and scores of trait anxiety as measured by the 16PF.

Although various descriptive methods may be employed, a self-report survey technique was utilized in this study to assess levels of trait anxiety (TA) and anxiety sensitivity (AS). An advantage of using a descriptive technique is that a relatively large set of data can be summarised and described. This results in savings with regard to expenses and time. A further advantage of this particular descriptive technique lies in the lack of interviewer bias, thereby resulting in more accurate data. Also, greater generalisability of results may be afforded, depending on the effectiveness of the sampling technique (Salkind, 1997). In general, the disadvantages of using this design are that: (a) there is no method for controlling for extraneous variables, (b) no cause and effect conclusions can be drawn, and (c) self-reported measures may be affected by bias factors or response sets (Mouton & Marais, 1990). In an attempt to reduce socially desirable responses in the present study, participants were informed of the benefits of truthful responses and the general objectives of this research study.

Furthermore, a correlational design was used in the investigation between the TA and AS constructs. Correlational designs are identified by their ability to demonstrate relationships between variables (De Vos, 1998). However, Zikmund (2000) pointed out that while correlation implies prediction, it does not imply causation. It should be noted that although two variables may be related, it does not mean that either is necessarily a cause of the other. Harris (1998) further cautioned that a correlation coefficient can only be used when data contains a complete set of information for both variables. A correlation cannot be calculated were data is omitted for either of the variables and hence it is imperative that a complete set of data is obtained and captured for both TA and AS.

5.4. Sampling Procedure and Participants

A non-probability, convenience sampling technique was used to draw a sample of 84 respondents. Non-probability sampling implies that the researcher is unaware of the probability that a particular case will be selected for the sample, nor if the sample accurately represents the population (Leary, 1991).

Harris (1998) referred to convenience sampling as a process in which the researcher selects a sample primarily because it is accessible and reasonably representative of the population of interest. Mitchell and Jolley (1992) indicated that although convenience sampling provides the researcher with vast quantities of data, the sample may not be representative of the population and therefore limitations on the generalisability of results are posed. Despite the disadvantages associated with non-probability convenience sampling, it remains the most commonly employed sampling technique (Patton, 1987). Cozby (1993) indicated that a major advantage of this type of sampling is that it is less expensive in terms of cost and time.

It would have been favourable to secure a large sample of respondents as the power of all statistical procedures increase with an increase in sample size, while a small sample holds statistical limitations (Harris, 1998). In order to conduct a viable study according to the set objectives, it was deemed necessary to obtain a sample with a minimum of 70 respondents. The investigation did however involve 84 undergraduate students from a university located in the Eastern Cape, South Africa. The participants consisted of first- and second-year student volunteers from various study-fields. These included psychology, sociology, social work, human resources and human movement science. Access to the student population was gained through lecturers that were prepared to set aside 10 minutes of lecture time in order for the researcher to present a brief presentation on the research and petition for volunteers.

Motivation for the use of students in the study is twofold. Firstly, student groups were used in

determining norms for both the measures used in this study and secondly, students have been used extensively in research that has contributed to the understanding of the AS construct (Cox, Borger, Taylor, Fuentes, & Ross, 1999; Holloway, & McNally, 1987; Lilienfeld, 1997; Maller, & Reiss, 1992; McNally, & Eke, 1996; McWilliams, & Cox, 2001; Rapee, & Medoro, 1994; Reiss et al., 1986; Sandin et al., 2001; Schmidt, & Joiner, 2002; Schmidt et al., 1997; Taylor et al., 1991; Telch, Shermis, & Lucas, 1989; Watt et al., 1998). Therefore it seemed appropriate to conduct research using a similar group.

The researcher was, however, aware of the potential biases involved in a student sample. According to Leary (1991) university students tend to be more intelligent than the general population. They also come from middle- and upper class backgrounds and tend to hold more liberal attitudes than the population in general. Furthermore, Bell (1962, in Leary, 1991) indicated that student volunteers tend to differ from students who choose not to volunteer. Student volunteers tend to be more unconventional, more self-confident, more extroverted and higher in need for achievement.

Exclusion criteria were applied and only English and Afrikaans speaking white students were requested to participate. As such, out of a total of 84 respondents, 64 (76.2%) had English as a home language and 20 (23.8%) had Afrikaans as their home language. This particular exclusion criterion might appear inappropriate in light of South Africa's multicultural population. It was, however, necessary in the light of the controversy and limitations surrounding the cross-cultural use of the 16PF, the chosen measure of trait anxiety (Abrahams, 1999). This controversy and limitations will be discussed in the next section.

The sample comprised an equal number of male (42) and female (42) respondents. The ages of the respondents ranged from 17 to 32 with the mean age of 20.36 years and standard deviation of 3.46. The most frequent occurring score (mode) being 19 years. These measures of central tendency

for age are to be expected for undergraduate students in their first and second year of study.

Equal gender numbers were deemed necessary due to the inconsistent findings regarding gender differences in ASI scores. As reported in the ASI manual (Peterson & Reiss, 1992), when samples were collapsed to compare gender differences, females obtained a mean of 19.8 ($N = 1974$) compared with 17.6 ($N = 1762$) for males. Thus, among general college populations, which comprised the majority of subjects on the original normative data, statistically significant differences were found between male and female, with females generally scoring or obtaining scores which were slightly higher than males.

5.5. Measures

This study is unique in that a literature search revealed that the relationship between the TA and AS constructs has not as yet been explored using the proposed measures. To date, studies have utilized Spielberger's State-Trait Inventory, Trait Form (STAI-T) (Sandin et al., 2001). Three measures were used in gathering data for this study; these were a biographical questionnaire, the Sixteen Personality Factor (16PF) Questionnaire and the Anxiety Sensitivity Index (ASI).

5.5.1. Biographical Questionnaire

A biographical questionnaire (see Appendix B) was used for the purpose of recording personal information about each participant and provided valuable information that was essential for the meaningful interpretation of the results. Personal information recorded included age, home language and gender. Age and gender were required in order to conduct a meaningful comparison between the sample scores and normed scores for the ASI. Home language on the other hand was used to verify the language preference used by the participant in completing the 16PF.

5.5.2. The Sixteen Personality Factor Questionnaire

The Sixteen Personality Factor Questionnaire (16PF), used to tap Trait Anxiety (TA) in this study, is widely known and used for the assessment of personality (Prinsloo, 1992). It was developed by R. B. Cattell in 1949 but has been revised and extended over the years. A South African version (SA92) was developed in 1992 consisting of 160 items with each item having three possible responses. Some questions are formulated to elicit a yes, no or undecided response. Others simply require respondents to indicate their preference. In all items, respondents were requested to keep their undecided response to a minimal.

Responses are scored to yield personality traits according to 16 first-order (primary traits) and five to eight second-order (secondary traits) factor scores. These traits combine to provide a reliable and valid measurement of an individual's personality (Prinsloo, 1992).

Of interest to this study were the factors which group together as anxiety components. Attention was paid to the primary traits of Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness) and Q₃ (ability to bind anxiety). In addition to these, the second-order trait QII (anxiety) was utilised as the measure of trait anxiety. Although Cattell (1966) found six first-order factors to combine to form the second-order factor of QII, this study only made use of the five factors found in the 16PF SA92 that load on QII (Prinsloo, 1992).

Added support for including the 16PF as a measure in this study stems from the fact that there is a need to build on the classical psychoanalytical understanding of anxiety, which groups anxiety, stress, guilt and depression together under the label of neurotic (Reiss 1997). In this regard, the 16PF's conceptualisation of both the second order and primary traits of low ego strength (C-), high guilt proneness (O+), and high ergic tension (Q₄: id pressure) are considered to be similar to the psychodynamic understanding of anxiety (Cattell et al., 1992), making it a suitable measure of choice.

5.5.2.1. Administration and Scoring

The 16PF is available in two versions, namely, a fully computerized and a partly computerized version. Use was made of the latter where the questionnaire is completed in the traditional paper and pencil format. The testee's responses are then typed into a computer and scored with the use of a scoring program to yield first-order factors. Second-order factors were computed using a Microsoft Excel spreadsheet.

The average time necessary for the respondent to complete the questionnaire should be approximately 35 minutes. It should take three to six minutes per questionnaire to key the responses into the computer in order to obtain raw scores.

The scales of the 16PF are bipolar having both a higher and a lower end. All scales are shown as sten scores implying that there are 10 possible graduations on the scale. The scales are normalized standard scores with a mean of 5.5 and a standard deviation of 2 (Karson & O'Dell, 1976).

5.5.2.2. Psychometric Properties

Norming procedures for the SA92 version of the 16PF included a total population of 6922 comprising 3400 men and 3448 woman. It is assured and argued that in light of the diversity of the smaller groups that made up the entire combined group, and since the examined subgroups did not differ substantially from each other with regard to the metric characteristics of their data, the derived norms tend to reveal the same distribution and features that would prevail in the general population (Prinsloo, 1992).

The reliability of the SA92 version, as determined by the Kuder-Richardson 8 coefficient, is higher than those for other existing versions of the 16PF (Prinsloo, 1992). The degrees of internal consistency (reliable coefficients) with which the items measure the particular scale or factor, are given in Appendix C. Prinsloo indicated that one of the most important objectives with the

adaptation of the 16PF was to improve the reliability coefficients of the scales. When compared to previous investigations, all but factor Q2 of the first-order factors yielded good to major improvements (Prinsloo, 1992). The reliability of the second-order factors were calculated by means of the formula of Mosier. Reliable coefficients for these factors are also given in Appendix C. Coefficients ranged from .74 to .90 and were reported to be highly satisfactory (Prinsloo, 1992). According to Prinsloo (1992), American research on the validity of the 16PF has been documented and is applicable to local circumstances. Factor analyses comparisons between the SA92 version of the 16PF and other versions yielded approximately the same structure. In addition, the factor structures of subgroups compared in terms of the variables of gender, test language and population group, did not differ to a great extent.

Subsequent to the aforementioned findings, Abrahams (1994; 1999) questioned the use of the 16PF in the multicultural South African context. She is of the opinion that English-speaking black South Africans interpret and understand 16PF question items differently from white South Africans. She contended that the quality of the respondents' language skills are a major cause of differences in endorsement rates between white and black respondents for at least 35 of the 160 items. Hence she believed it to be inappropriate to utilise the 16PF with black South Africans. In light of these findings, it was deemed necessary to apply exclusion criteria and utilise only English and Afrikaans speaking white participants in this study.

5.5.3. Anxiety Sensitivity Index

The Anxiety Sensitivity Index (ASI) is a self-report questionnaire comprising 16 items asking about the extent to which anxiety-related sensations are considered to be fearful or catastrophic in outcome (Peterson & Reiss, 1992). Each item is rated on a five-point Likert scale ranging from 0 (very little) to 4 (very much). The language level is considered to be readable to most high school

students (Peterson & Reiss, 1992). The ASI is a popular and well-researched measure for panic disorder and related conditions (Taylor, 1999). The ASI has been translated into Spanish, Italian, Chinese, Dutch, German, and Hebrew. Permission for translation into other languages has also been granted (Peterson & Reiss, 1993). In addition, a childhood version of the ASI has been published (Silverman, Fleisig, Rabian & Peterson, 1991).

5.5.3.1. Administration and Scoring

The ASI can be administered in three to five minutes. It is scored by summing all 16 items. Possible scores range from 0 to 64, with higher scores reflecting higher levels of anxiety sensitivity.

5.5.3.2. Psychometric Properties

Rapee, Brown, Antony, and Barlow (1992) reported means for the ASI across different anxiety disorder groups, as follows: panic disorder with mild or no agoraphobia, 36.4 (SD = 10.3); panic disorder with moderate or severe agoraphobia, 32.1 (SD = 11.3); generalized anxiety disorder, 28.6 (SD = 10.6); social phobia, 21.4 (SD = 12.6); specific phobia, 20.0 (SD = 13.4); and obsessive-compulsive disorder, 27.2 (SD = 3.4). For nonclinical samples (averaging across 12 studies with more than 4500 participants), the mean score of the ASI was 19.1 (SD = 9.11). A small gender difference is evident with the mean scores for females being 19.75 and males 17.62 (Peterson & Reiss, 1992).

Across a number of studies, internal consistency (as indicated by Cronbach's alpha) appears to be good to excellent, ranging from .82 to .91. In addition, test-retest reliability appears to be satisfactory, with correlations (*rs*) ranging from .71 to .75 (Peterson & Reiss, 1992).

A literature search has revealed no studies using the ASI in the South African context, and no normative information is available for the South African population at present. Hence it was

necessary to establish the internal reliability coefficient for the ASI on the proposed sample group. It was deemed appropriate to use Cronbach's alpha coefficient as various authors have utilised this method to determine the internal reliability of the ASI (Cox, Endler, Norton & Swinson, 1991; Peterson & Heilbronner, 1987; Taylor et al., 1991; Telch et al., 1989). The reliability analysis conducted for this study yielded an alpha coefficient of .86. The practical connotation of this value implies that the ASI may be considered reliable for nonclinical and clinical testing. To this end, Rosenthal and Rosnow (1991) stipulated that reliability coefficients of approximately .85 or higher may be considered as indicative of dependable psychological tests. In addition to this, Aiken (1997) pointed out that where a reliability coefficient of at least .85 is obtained, tests may be used to compare one person's score with another.

The factor structure of the ASI has been a topic of debate. Although research on the factor structure of the ASI has been characterised by widely discrepant results obtained by varying statistical methods, common themes have emerged that appear to clarify the issue (Deacon & Valentiner, 2001). Lilienfeld et al. (1993) suggested that anxiety sensitivity consists of several correlated lower-order factors that load on a single higher-order factor (i.e., general AS). Consistent with this hypothesis, mounting evidence suggests that three lower-order ASI dimensions exist: (a) fears of somatic sensations (i.e., feeling shaky or faint, experiencing a rapid heartbeat, stomach growling, being nauseous or short of breath, and unusual body sensations), (b) fears of cognitive consequences of anxiety (effects of being nervous, inability to concentrate), and (c) fears of publicly observable symptoms (worry that others will notice nervousness or shakiness). Recent three-factor ASI solutions obtained from exploratory factor analyses by Stein et al. (1999), Stewart et al. (1997), Taylor et al. (1996), and Zinbarg, Barlow, and Brown (1997) have each demonstrated this pattern. Zinbarg et al. (1997) have argued that the debate regarding the factor structure of the ASI has been largely resolved by the hierarchical model proposed by Lilienfeld et al. (1996). A discussion of this

model is found in the chapter that follows.

The ASI has been shown to have a satisfactory degree of criterion validity and construct validity (Peterson & Reiss, 1993). In addition, scores on the ASI are predictive of a number of panic-related variables such as response to panic induction challenges and the future development of uncued panic attacks (Schmidt, Lerew, & Jackson, 1999). Among the anxiety disorders, ASI scores tend to be most elevated in people with panic disorder, although they are also somewhat elevated in the other anxiety disorders (Taylor et al., 1992). The ASI has been shown to be sensitive to the effects of treatment, showing significant decreases following cognitive-behavioural therapy for panic disorder (Hazen et al., 1996).

5.6. Procedure

The procedure of the study commenced with a brief 10-minute presentation to students on firstly, the nature of the intended research, secondly, the requirements for inclusion in the study and thirdly, why the mentioned exclusion criteria applied. A venue was arranged and four sessions, of an hour each over three consecutive days, were made available to the students for completion of the questionnaires. After a short discussion on freedom of choice, privacy and confidentiality, each participant was asked to complete and sign a consent form (Appendix D). By doing so, they granted permission for their personal information to be used for research purposes only. In turn they were guaranteed confidentiality of the information obtained. The study allowed anonymity only for those participants who did not want feedback. Participants requesting feedback were required to provide personal identifying information. A general summary sheet of results was made available and communicated to those participants who requested such information about themselves.

The psychometric measures were scored and checked by the researcher before being captured in a database using Microsoft Excel. In order to ensure confidentiality for those requesting feedback,

the researcher awarded sequential numbers to the assessment forms rather than using participant names in recording and reporting data.

5.7. Statistical Analyses

The data was analysed in accordance with the objectives of this study. Both descriptive and inferential statistics were used in achieving these objectives. In terms of the first objective, descriptive statistics were used to describe the performance of the sample on the ASI and the factors Q4 (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q3 (ability to bind anxiety) and the second-order factor QII (anxiety) of the 16PF. This involved investigating the measures of central tendency (mode, median and mean) and variability (range and standard deviation). The mode refers to the score that occurs most frequently. The median is the score at or below which 50% of the scores fall and above which 50% of the scores fall, whereas the mean indicates the most representative score of the sample group. With regard to the measures of variability, the range is the measure of the distance between the highest and the lowest score in the distribution. Standard deviation refers to the square root of the variance and is used as a measure of the dispersion or spread of the group of scores by indicating the average deviation of the scores from the mean (Harris, 1998).

The second objective required that two sample independent t -tests be conducted in order to examine if statistically significant differences exist between scores of males and females. These tests are based on probability theory and are usually performed at the 0.05 level (95% probability that results are not due to chance) or at the 0.01 level (99% probability that results are not due to chance) (De Vos, 1998). In the present study, the tests were performed at both levels with a 95% probability ($p < 0.05$) and 99% probability ($p < 0.01$).

In terms of the third objective, a correlation coefficient was generated in order to describe the relationship between the ASI scores and the first-order factors Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness) and Q₃ (ability to bind anxiety) scores of the 16PF. According to Harris (1998) and Rosnow and Rosenthal (1996), the r value gives information about both the strength and the direction of the relationship between two variables. The Pearson correlation coefficient, or Pearson r is the most commonly used measure of correlation (Leary, 1991). The numerical value of a correlation coefficient ranges between -1.00 and +1.00. The sign of a correlation coefficient (+ or -) indicates the direction of the relationship between the two variables. A positive correlation indicates a direct, positive relationship between the two variables. If the correlation is positive, scores on one variable tend to increase as scores on the other variable increase. A negative correlation in contrast indicates an inverse, negative relationship between two variables. As values of one variable increase, values of the other variable decrease. The magnitude of the correlation expresses the strength of the relationship between the variables. A correlation of zero ($r = 0$) indicates that no relationship exists between variables. As the numerical value of the coefficient increases, so does the strength of the relationship. A correlation of one ($r = 1$) indicates a perfect relationship between variables.

The coefficient of determination (r^2) was calculated in order to make r more interpretable (Leary, 1991). The coefficient of determination reports the proportion of variance in one variable that is accounted for by the other variable (Harris, 1998). In other words, r^2 is interpreted as the proportion of the variance among the ASI scores that are attributable to variation in the QII scores and the proportion of variance among the QII scores that are attributable to variations in the ASI scores.

Cairns (2001) suggested that with regard to the interpretation of the significance of the correlations, the well-established guidelines suggested by Guilford (1946) should be used for the

interpretation of the magnitude of the relationships. These guidelines are outlined below:

Less than .20	slight; almost negligible relationship
.20 - .40	low correlation; definite but small relationship
.40 - .70	moderate correlation; substantial relationship
.70 - .90	high correlation; marked relationship
.90 - 1.00	very high correlation; very dependable relationship

In line with the fourth objective, a multiple correlation coefficient was utilised where R depicts a correlation between a group of variables and another variable (Harris, 1998). The multiple R was interpreted like a Pearson r in the sense that R^2 reflects the proportion of variance in the ASI scores predictable from scores on the best linear combination of factors of the 16PF that tap trait anxiety, namely: Q_4 (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness) and Q_3 (ability to bind anxiety).

5.8. Ethical Considerations

There are various ethical considerations to be borne in mind when conducting research. Harvey and MacDonald (1993) cautioned that ethical issues tend to be complicated and few hard and fast rules exist to guide the researcher. They are of the opinion that the researcher should always consider the well-being of their participants and never violate their trust.

According to Leary (1991), a primary responsibility of any researcher is to obtain the informed consent of the individuals participating in the research. In the process of obtaining their informed consent, prospective research participants are given enough information about the nature of the study so that they can make a reasoned decision regarding whether they want to participate or not. Informed consent further ensures that researchers do not violate people's right to privacy (Leary,

1991). The right to privacy is a person's right to decide when, where, to whom, and to what extent his or her attitudes, beliefs, and behaviour will be revealed to others (Elmes et al., 2003). To this extent, the nature of the research study was discussed with the participants. They were informed that involvement was voluntary and that participation or non-participation held no negative consequences. Volunteers provided agreement for participation through initialling and signing a consent document (Appendix D). Aspects contained in this document were discussed at length in both English and Afrikaans.

Related to the violation of rights, is the issue of coercion. Coercion refers to situations where participants are forced or pressurised by a researcher or someone who has authority or influence over them to participate in a study (Salkind, 1997). Coercion violates freedom of choice to participate in a research study. Barker, Pistrang and Elliott (1994) reiterated that there should be no attempt at neither implicit nor explicit coercion. These authors stated further that a participant's self-determination and autonomy must be fostered at all times. At no time were participants coerced to participate in the study. Assessment was conducted away from regular lecture venues and outside normal lecture times. As part of obtaining informed consent, it was made clear to participants that they could withdraw from the study at any time.

The information gained about participants during the course of research is considered confidential. Confidentiality refers to the fact that the data obtained may only be used for the purpose of the study and may not be revealed to others (Leary, 1991). To reveal such information would violate a participant's right to privacy. This study made provision for confidentiality as no personal identification was revealed during statistical procedures or during the reporting of results. It also allowed for anonymity as only participants wishing to receive feedback were requested to provide their names. Participants thus had freedom of choice about providing information that would identify them. In addition to the mentioned ethical considerations, the research also met all

the requirements specified by the Human Ethics Committee and the Advance Degree Committee of the University of Port Elizabeth.

5.9. Conclusion

This chapter has focused on the research design and methodology that were employed in this study. An exploratory-descriptive research design was employed. Use was made of a non-probability convenient sampling technique to draw a sample of first- and second-year students. Data was gathered through the use of a biographical questionnaire, the Anxiety Sensitivity Index (ASI) and the Sixteen Personality Factor Questionnaire (16PF). Descriptive statistics were used to analyse the information and inferential statistics were used to examine the relationship between scores. The results obtained are discussed in the following chapter. The researcher also took cognisance of the ethical considerations in research such as informed consent, coercion and confidentiality.

Chapter 6

Results and Discussion

6.1. Chapter Preview

The preceding chapters provided a theoretical overview of anxiety, trait anxiety (TA) and anxiety sensitivity (AS). These theoretical aspects and the ensuing debate surrounding the relationship between the constructs TA and AS would be inconclusive unless tested through a suitable empirical investigation. In this chapter, the empirical results are reported and discussed according to the objectives determined and outlined in Chapter 1. Firstly, descriptive statistics on the ASI and the factors of the 16PF that tap anxiety are presented. Secondly, the results of the t-tests examining the existence of significant differences between gender are reported. Thirdly, the relationship between the ASI scores and the second-order factor QII (anxiety) scores of the 16PF is conveyed. Lastly, the relationship between ASI scores and the factors scores of the 16PF that tap trait anxiety are examined and discussed.

6.2. Aim and Objectives of the Research

The aim of this study, as outlined in Chapter 1 and the previous chapter, was to explore and describe the relationship between trait anxiety and anxiety sensitivity. In order to realise this aim, four specific objectives were identified:

1. Describe the scores of the sample on the Anxiety Sensitivity Index (ASI) and the factors of the Sixteen Personality Factor Questionnaire (16PF) that tap trait anxiety, namely: Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q₃ (ability to bind anxiety) and the second-order factor QII (anxiety).

2. Explore and describe possible gender differences for scores on the ASI and the factors Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q₃ (ability to bind anxiety) and the second-order factor QII (anxiety) of the 16PF.
3. Explore and describe the relationship between scores of the ASI and the second-order factor QII (anxiety) scores of the 16PF.
4. Establish the degree of relationship between the ASI scores and the scores of the 16PF that tap trait anxiety namely: Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness) and Q₃ (ability to bind anxiety).

6.3. Empirical Results

The empirical results are reported and discussed in this section. Frequent referral is made to the symbol notation for the factors of the 16PF. These are as follows: Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q₃ (ability to bind anxiety) and the second-order factor QII (anxiety). Factor names listed are not those given in the 16PF Handbook (1992) but rather those used by Karson and O'Dell (1976). These authors employ titles for the factors that have greater clinical significance (refer to Appendix A for a description of the full list of first-order factors of the 16PF).

6.3.1. Descriptive Statistics

In terms of the first objective of this study, descriptive statistics were used to describe the performance of the sample on the ASI and on the factors of the 16PF that tap TA namely, Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q₃ (ability to bind anxiety) and the second-order factor QII (anxiety) of the 16PF.

6.3.1.1. Anxiety Sensitivity Index

Possible scores for the ASI range from 0 to 64, with higher scores reflecting higher levels of anxiety sensitivity. Elevated scores on the ASI are associated with anxiety disorders in general and panic disorder in particular. Rapee et al., (1992) reported means for the ASI across different anxiety disorder groups, as follows: panic disorder with mild or no agoraphobia, 36.4 (SD = 10.3); panic disorder with moderate or severe agoraphobia, 32.1 (SD = 11.3); generalised anxiety disorder, 28.6 (SD = 10.6); social phobia, 21.4 (SD = 12.6); specific phobia, 20.0 (SD = 13.4); and obsessive-compulsive disorder, 27.2 (SD = 3.4). Healthy control participants score lower than individuals with these disorders. As reported in the 1992 manual, normal ASI scores have a mean of 19.01 with a standard deviation of 9.11 for the general population (Peterson & Reiss, 1992). In this study, the mean or most representative score obtained by the sample group of 84 for the ASI was 20.37 with a standard deviation of 9.46. The minimum score obtained in the sample was 5 with a maximum of 50. When the results of this study are compared to normalised data, the mean scores of the sample group is slightly higher than normalised data, indicating a possible higher level of AS.

6.3.1.2. Sixteen Personality Factor Questionnaire

Table 1

Descriptive statistics for the 16PF

	N	Mean	SD	Minimum	Maximum	Range
QII (Anxiety)	84	5.14	1.90	1.20	9.40	8.20
Q ₄ (Free-floating anxiety)	84	5.38	2.08	1.00	10.00	9.00
O (Guilt proneness)	84	5.24	2.83	1.00	10.00	9.00
C (Ego strength)	84	6.17	2.42	1.00	10.00	9.00
L (Suspicious-ness)	84	4.69	2.31	1.00	10.00	9.00
Q ₃ (Ability to bind anxiety)	84	5.44	2.47	1.00	10.00	9.00

As can be seen in Table 1, the second-order factor QII that measures trait anxiety returned a

mean stanine (sten) score of 5.14 with a standard deviation 1.90. Normalised standard scores for the factors of the 16PF are reported with a mean sten score of 5.5 and a standard deviation of 2 (Prinsloo, 1992). As such, the sample mean is within the normal range for Factor QII and the sample as a whole may be considered to reflect a normal level of trait anxiety.

Results for the individual factors comprising the QII score, (i.e., the five factors of the 16PF that constitute trait anxiety) are also reflected in Table 1. Factor C (ego strength) was the only factor that obtained a mean sten score above the normalised standard score of 5.5. This indicates that the sample group as a whole has greater ego strength than the original norm group. As such, the group is more emotionally stable, calm, and has a tendency to face reality (Cattell, 1989).

The mean scores for the factors of the 16PF, previously mentioned, were based on sten scores. In order to compare the results of this sample to normative data, mean raw scores were used. This was necessary as only raw score normative data was available in the 16PF SA92 manual to which comparisons could be made (Prinsloo, 1992).

Table 2

Descriptive statistics for factors of the 16PF (raw scores) versus normative data

	Mean sample raw score	Mean norm raw score
Q ₄ (Free-floating anxiety)	8.58	8.67
O (Guilt proneness)	7.58	7.98
C (Ego strength)	11.74	10.41
L (Suspicious-ness)	10.05	11.65
Q ₃ (Ability to bind anxiety)	11.14	11.33

It is evident from Table 2 that differences were found in the mean raw scores for the sample with regard to Factors C and L. The sample group scored higher for Factor C than the norm group and lower for Factor L.

Cattell (1957) emphasised that Factor C deals with the ability to express impulses well at a given time, rather than making a conclusion about the ability to plan one's whole life adequately. In light of the difference for Factor C, it could be expected that the sample group be more emotionally stable, free of neurotic symptoms, realistic about life, unworried, steadfast, self-controlled, calm, patient, persevering and thorough, loyal, and dependable than the norm group as a whole. The group used to establish the norms could on the other hand have been more emotional, dissatisfied, showing a variety of neurotic symptoms, plaintive, evasive, immature, autistic, worrying, anxious, changeable, excitable, impatient, quitting, careless and undependable (Karson & O'Dell, 1976). The sample group can be summed up as having better capacity to express available emotional energy along integrated as opposed to impulsive channels (Cattell, 1957).

According to Karson and O'Dell (1976), Factor L is "one of the most indicative of disturbance on all the 16PF scales" (p. 56). Those obtaining high scores on L are likely to insist on getting their point across, feel that others are talking about them behind their backs, quick to take offence, cannot endure human frailties, are oppositional, likely to fight and be antagonistic. On the other hand, a low L score is characterised as trustful, understanding, easygoing, friendly, relaxed and composed (Karson & O'Dell, 1976). The sample group scoring lower than the norm group on Factor L would possess more of the latter group of qualities. Karson and O'Dell stipulated, that a low L score "must be regarded as a healthy sign" (p. 58). The lower L when taken together with the higher C, could indicate a sample group that is better adjusted than the original norm group. This translates into the sample group being better suited for exploring the relationship between the constructs of TA and AS as they are considered emotionally stable and honest in providing accurate responses.

6.3.2. Gender Differences Between Scores

In order to realise the second objective, two-sample independent ttests were conducted to

examine if statistically significant differences exist between scores for males and females on the ASI and the factors measuring trait anxiety of the 16PF. Statistical significance was established by means of critical values corresponding to the 99% and 95% significance levels.

6.3.2.1. Anxiety Sensitivity Index

The mean score obtained for the sample as a whole on the ASI was 20.37 (see Table 1). When the scores were collapsed to compare gender differences, it was found that the male mean was 20.29 (SD = 9.23) and the female mean was 20.45 (SD = 9.80). When means are compared with previous studies, it is evident that the mean scores obtained in this study for the ASI are higher for both male and female than the mean scores obtained in other studies. As reported in the ASI manual (Peterson & Reiss, 1992), females obtained a mean of 19.8 (N=1974) compared with 17.6 (N=1762) for males. A second study among undergraduate students by Stewart et al. (1997), reported means scores of 16.4 (N=528) and 14.6 (N=290) for females and males respectively.

The results of this study are inconsistent with previous studies in that a significant difference was not evident between male and female ASI scores. The two-sample independent t-test reported a p-value of .94. The difference between gender scores was thus not significant at the 95% confidence level. This finding is thus contradictory to previous research (Peterson & Reiss, 1992; Stewart, Taylor et al., 1997) where significant differences were found. A possible explanation of this result is given at the end of the next section when results of the 16PF are taken into consideration.

6.3.2.2. Sixteen Personality Factor Questionnaire

The mean score obtained for the second-order Factor QII (trait anxiety) of the 16PF for the entire sample was 5.14 (See Table 1). The results show that males (5.03) scored lower than females (5.25) on this factor, although no significant difference was evident at the 95% confidence level.

Table 3

Gender means for scores on ASI and 16PF factors (sten scores)

Scale	Male		Female	
	Mean	SD	Mean	SD
QII (Anxiety)	5.03	1.85	5.25	1.96
Q ₄ (Free-floating anxiety)	5.40	1.99	5.36	2.18
O (Guilt prone ness)	5.00	2.73	5.48	2.94
C (Ego strength)	6.21	2.26	6.12	2.60
L (Suspicious-ness)	4.62	2.37	4.76	2.28
Q ₃ (Ability to bind anxiety)	5.64	2.35	5.24	2.59

Table 4

Significance level of t-test for ASI and the factors of the 16PF regarding gender

Scale	df	t	p	S/NS*
QII (Anxiety)	82.00	0.52	.61	NS
Q ₄ (Free-floating anxiety)	82.00	0.10	.92	NS
O (Guilt proneness)	82.00	-0.77	.44	NS
C (Ego strength)	82.00	0.18	.86	NS
L (Suspicious-ness)	82.00	-0.28	.78	NS
Q ₃ (Ability to bind anxiety)	82.00	0.75	.46	NS

* S = significant, NS = not significant

With regard to the other factors of the 16PF (see Table 3), females scored higher for the factors O (guilt proneness) and L (suspiciousness). Males on the other hand, scored higher than females on the factors Q₄ (free-floating anxiety), C (ego strength) and Q₃ (ability to bind anxiety). Although differences in mean sten scores are reported, no significant differences were established between males and females for any of the factors of the 16PF investigated in this study. The two-tailed t-test reported p values of greater than 0.05 (i.e. $p > 0.05$) for all factors of the 16PF (see Table 4).

Normative data given in the manual of the 16PF SA92 (Prinsloo, 1992) indicated a significant difference (t-test significant at the 99% confidence level) between male and female sten scores with regard to Q₄ (free-floating anxiety). Women scored higher than men on this factor. As such, according to Cattell et al. (1992), women tend to be more irrationally worried, tense, irritable and

anxious than men. This differs from results obtained for the current sample where no significant differences were established between male and female scores for the factor Q₄. Although not significant, men in the sample group actually scored higher than females indicating possible higher levels of free-floating anxiety.

Normative data with regard to the Factors C (ego strength) and Q₃ (ability to bind anxiety) specify significant differences (at the 95% confidence level and less) between males and females with females scoring lower. Although not significant, the results of the sample are in line with these results in that males scored higher than females on these factors. Hence, it can be expected that males will tend to be more emotionally stable, free of neurotic symptoms, realistic about life, un-worried, and self-controlled (Karson & O'Dell, 1976).

Table 5

Gender means for scores on 16PF factors versus normative data

	Gender	Mean sample raw score	Mean norm raw score
Q ₄ (Free-floating anxiety)	Male	8.19	8.18
	Female	8.98	9.17
O (Guilt Proneness)	Male	6.62	7.18
	Female	8.55	8.78
C (Ego Strength)	Male	12.21	10.78
	Female	11.26	10.04
L (Suspiciousness)	Male	10.12	11.81
	Female	9.98	11.50
Q ₃ (Ability to bind anxiety)	Male	11.83	11.59
	Female	10.45	11.07

It must be reiterated that comparison between males and females of the sample discussed, made use of sten scores. As previously mentioned, in order to compare the results of this sample to normative data, mean raw scores were used as only raw score normative data was available in the 16PF SA92 manual (Prinsloo, 1992). Table 5 indicates that the current female sample scored lower for the Factor L than the norm. Males of the current sample scored higher on Factor C and lower on

Factor L than the norm. Thus both males and females have lower levels of suspiciousness than the original norm group and males have greater ego strength.

Pierce and Kirkpatrick (1992) have hypothesised that males typically obtain significant lower levels of anxiety on self-report measures owing to an under-reporting of their actual levels of anxiety. This is mainly due to greater social sanctions against such reporting amongst men. Such a bias would explain findings of lower scores for men on anxiety dimensions of the 16PF and the ASI. However, this is not the case in the sample group as male and female scores showed no significant difference for the ASI. Furthermore, although not significantly different, males actually scored higher than females on Factor Q₄ (free-floating anxiety) as seen in Table 3. From these results it may be deduced that males in the sample group possibly exhibit higher levels of AS and free-floating anxiety than the original norm groups. Notwithstanding the latter, it is speculated that higher ego strength scores and lower suspiciousness scores of the males in the sample group may in fact suggest that they are more emotionally stable, mature and calm, together with being trustful, understanding, and accepting of personal unimportance (Karson & O'Dell, 1979). When this is considered against Pierce and Kirkpatrick (1992) hypothesis, it is speculated that the males in the sample group are more open about their true levels of anxiety than the norm groups. Again, this bids well for the sample group being well suited to the exploration of the relationship between TA and AS.

6.3.3. Relationships between the ASI and the factors of the 16PF

To give effect to objective three, Pearson product moment correlations coefficients were also calculated to establish the degree of relationship between the ASI scores and the scores of the factors that constitute TA namely: Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength),

L (suspiciousness) and Q₃ (ability to bind anxiety). The correlation coefficients resulting from this analysis are summarised in Table 6.

Table 6

Pearson correlation between ASI and the factors of the 16PF

	ASI Score (<i>r</i>)	<i>p</i>
Q ₄ (Free-floating anxiety)	.438	.000**
O (Guilt Proneness)	.357	.001**
C (Ego Strength)	-.494	.000**
L (Suspiciousness)	.327	.002**
Q ₃ (Ability to bind anxiety)	-.299	.006**

** Correlation is significant at the 99% confidence level

6.3.3.1 Pearson Product Moment Correlation

The Pearson correlation coefficient, or Pearson *r* is the most commonly used measure of correlation and gives information about both the strength and the direction of the relationship between two variables. The results show that a significant relationship exists between all five factors scores and ASI scores. However, a significant positive relationship, at the 99% confidence level, exists between the ASI and the factors Q₄, O and L. It would stand to reason when considering the characteristics of someone scoring high on free-floating anxiety, guilt proneness and suspiciousness, that an elevated score on the ASI could be expected. According to the guidelines of Guilford (1946), quoted in chapter 5, the moderate correlation between the ASI and Q₄ ($r = 0.438$) can be described as a substantial relationship. With regard to the Factors O and L, although the correlation is low, a definite relationship exists.

Also evident is a negative relationship between the ASI and the Factor C ($r = -0.494$). If the description of C- is considered, namely being affected by feelings, emotionally liable, easily upset and changeable, then it fits that a respondent displaying these characteristics is more likely to

experience anxiety and will thus score higher on the ASI. The moderate correlation between the ASI and Factor C, would also be described by Guilford (1946) as being a substantial relationship.

A negative relationship also exists between the ASI and the Factor Q₃ ($r = -0.299$). A Q₃- score, or inability to bind anxiety, is associated with being casual, careless of protocol, undisciplined, following own urges and having low self-sentiment. An individual displaying these characteristics, and subsequently scoring low on this factor, is also more likely to experience anxiety and thus score high on the ASI. According to Guilford (1946), although the correlation is low, the relationship between Q₃ and ASI scores can be described as small.

To give effect to the fourth objective, namely to gain insight into the relationship between scores of the ASI and the second-order factor QII (anxiety), the Pearson product moment correlation coefficient was also calculated to describe and explore this relationship. The ASI scores revealed a significant correlation with the QII (anxiety) scale of the 16PF, $r = .486$ ($p < .01$). The correlation is significant at the 99% confidence level. It should be noted that although the ASI and the second-order factor QII scores of the 16PF may be related; it does not signify that either is necessarily a cause of the other. The well-established correlation guidelines of Guilford (1946) describe a substantial relationship between two variables as obtaining a correlation coefficient (r) of between .40 and .70. It is thus evident that the results of this study report a substantial positive relationship between the ASI and the second-order Factor QII (trait anxiety) scores of the 16PF ($r = .486$). This implies that a person scoring high on the ASI will also score high on the second-order Factor QII, or stated differently, respondents who experience AS as predicted by the ASI score will also experience TA as measured by the second-order factor QII.

These findings on the correlations between Factor QII of the 16PF as a measure of TA and the ASI as a measure of AS, is comparable to correlations reported by other authors (e.g., McNally, 1994). Such correlations are consistent with the hypothesis that TA and AS are correlated but are

not sufficiently high to support the hypothesis of identical constructs.

6.3.3.2. Coefficient of Determination

The coefficient of determination (r^2) was calculated in order to make r more interpretable and to report the proportion of variance in one variable that is accounted for by the other variable. The results revealed an r^2 of .236 at the 99% confidence level ($p < 0.01$) for the relationship between ASI and QII scores. It can thus be reported that 24% of the variance among the ASI scores are attributable to variation in the QII scores and the vice-versa.

Reiss (1991) found r^2 (common variance) to range from 0 to a high of 36% of the variance in data from 11 samples. As Peterson and Plehn (1999) indicated, the ASI and TA measures tend to share a third or less of their variance. “This level of association between measures strongly suggest that TA measures and the ASI measure distinct variables” (Peterson & Plehn, 1999, p.69). As mentioned in a previous chapter, Taylor et al. (1991) surveyed five correlations between measures of TA and AS and found them to range from .07 to .55 with a median correlation of .46. The r^2 value of the median correlation indicates that the measures of TA and AS typically share 21% common variance. The results of this study compares favourably to those found by Taylor et al. in that the r^2 value of this study indicates a common variance of 24% among the ASI scores and QII scores. McNally (1999) has characterised these levels of variance as “modest” and viewed them as evidence that TA and AS are related but distinct constructs (p.10).

Although TA and AS are viewed as separate constructs, the 24% variance between the constructs may be accounted for in the previously mentioned hierarchical model proposed by Lilienfeld et al. (1996). According to these authors AS may be a lower-order trait that is nested hierarchically within a higher-order dimension of TA. Lilienfeld et al.’s suggested model is analogous to the hierarchical models of intelligence. As within a hierarchical model of intelligence, the identification of separable

lower order factors would not dispute the existence of a general intelligence factor. For example, at least two group factors (e.g., Verbal and Spatial) in addition to a general factor of intelligence are hypothesized in Vernon's (1969) model of intelligence.

As Watson and Clark (1992) have noted, a prerequisite for a hierarchical factor model is that both general and specific factors influence the traits in the hierarchy. According to the hierarchical model proposed by Lilienfeld et al. (1996), TA can be thought of as a tendency to react anxiously to potentially anxiety-inducing stimuli in general, whereas AS can be thought of as a more specific tendency to react anxiously to one's own anxiety and anxiety-related symptoms. AS would thus share variance with the higher-order trait anxiety factor, but would also possess unique variance that is essentially unrelated to TA. Coexisting with AS at the lower-order level may be other sensitivities, such as the injury sensitivity and social evaluation sensitivity discussed in the previous chapter. These sensitivities, although separable, may share sufficient variance to form a higher-order TA factor. In turn, AS may be divisible into even more specific lower-order factors, such as anxiety regarding mental incapacitation, physical sensations and social concerns also mentioned in a previous chapter.

The suggested hierarchical model has merit as not only does it account for covariance between TA and AS measures, but may also provide a resolution to the TA-AS controversy. It avoids a dichotomy between TA and AS as both constructs may contribute important information but at different levels of explanation. As Watson and Clark (1992) noted, "evidence supporting one level of the [hierarchical] structure does not necessarily constitute a refutation of the other" (p. 499).

Thus far the focus has been on establishing the relationship or correlation between two variables at a time, namely between the ASI score and each of the relevant factors of the 16PF. However, it is important to recognise that a number of different variables may be related to each other, or influence each other in predicting a specific behaviour or score. In order to establish this, a multiple

regression analysis was conducted.

6.3.3.3. Multiple Regression Analysis

A correlation based on a combination of factors (when all the factors of the 16PF are taken into account) is purported to be more accurate than a correlation based on each factor individually. Thus to add impetus to objective four, a multiple regression analysis technique revealed that at a 99% significant level ($p = .000082$), 28% ($R^2 = .281$) of the variance in the ASI score can be explained by the combination of factors Q_4 , O, C, L and Q_3 . Based on the value of R (.53), the five factors together provide a moderate explanation of the ASI score (Guilford, 1949).

This finding concurs with the results of the coefficient of determination discussed in the previous section where r^2 indicated a variance of 24%. As R^2 of the multiple regression analysis is purported to be more accurate, it can be concluded that 28% of the variance in the ASI is accounted for by the combination of factors. Although using a multiple regression analysis indicates a higher level of variance, the level is still considered to be modest and as such, TA and AS can be viewed as related, but distinct constructs.

6.4. Conclusion

This chapter has discussed the results of the study in relation to the four set objectives required to achieve the aim of the research. Where possible, the results were linked to previous studies and literature cited in previous chapters. The conclusions based on these finding, limitations of the study as well as recommendations for future research are outlined in the next chapter.

Chapter 7

Conclusions, Limitations and Recommendations

7.1. Chapter Preview

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

7.2. Objectives of the Study Revisited

The general aim of this study was to explore and describe the relationship between trait anxiety and anxiety sensitivity. In order to accomplish this aim, four specific objectives were identified, each of which are discussed in the sections that follow.

7.2.1. Description of ASI and 16PF Scores

The first objective was to describe the scores of the sample on the Anxiety Sensitivity Index (ASI) and the factors of the Sixteen Personality Factor Questionnaire (16PF) that tap trait anxiety (TA), namely: Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q₃ (ability to bind anxiety) and the second-order factor QII (anxiety).

The ASI mean score for the 84 participants in the sample group was 20.37, with a standard deviation of 9.46. When the results of this study are compared to normalised data, the mean score of the sample group is slightly higher than normalised data, indicating a possible higher level of AS. The minimum score obtained in the sample was 5 with a maximum of 50. When these low and high scores are considered in light of literature, certain conclusions may be made. Firstly, the low scores

may genuinely reflect low AS levels but they may also indicate that a strong self-deception or repression element may be at work. Given a sufficient stressor, low AS subjects with the latter characteristics, may be at greater risk for psychopathology. Secondly, individuals in the sample group with high scores may be indicating the presence of an anxiety disorder, as elevated scores on the ASI are associated with anxiety disorders in general and panic disorder in particular. In addition to panic disorder, generalised anxiety disorder, social phobia, specific phobia as well as obsessive-compulsive disorder, the high scores may indicate a risk factor for alcohol or drug abuse as these substances are used to dampen the sensations of anxious arousal (Cox, Borger & Enns, 1999).

The second-order factor QII, that measures trait anxiety, returned a mean stanine score of 5.14 with a standard deviation 1.90. As such, the sample mean is within the normal range for this factor. It can thus be concluded that the sample as a whole may be considered to reflect a normal level of trait anxiety. With regard to the individual factors namely Q₄, C, O, L and Q₃, that constitute trait anxiety (QII), the sample group scored higher for Factor C and lower for Factor L than the norm group. As a result, it can be expected that the sample group is more emotionally stable, free of neurotic symptoms, realistic about life, unworried, steadfast, self-controlled, calm, patient and dependable than the norm group as a whole. The sample group can thus be described as having a better capacity to express available emotional energy along integrated as opposed to impulsive channels. The lower L scores together with the higher C scores, indicates a sample group that is better adjusted than the original norm group. From this, it may be concluded that the sample group was well suited for exploring the relationship between the construct of trait anxiety and anxiety sensitivity.

7.2.2. Description of Gender Differences

The second objective was to explore and describe possible gender differences for scores on the

ASI and the factors Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness), Q₃ (ability to bind anxiety) and the second-order factor QII (anxiety) of the 16PF.

When the ASI scores of the total group were collapsed to compare gender differences, it was found that the mean score of males (20.29) was lower than that of females (20.45). In comparison to previous studies, it is evident that the mean scores obtained in this study are higher for both males and females. Further, where other studies have found a significant difference with regard to gender, this study found no significant difference. It can thus be concluded that males and females in the sample group experience similar levels of AS.

With regard to the individual factors of the 16PF, that combine to formulate QII, females scored higher for the Factors O and L. Males on the other hand, scored higher than females on the Factors Q₄, C and Q₃. Although differences in mean stanine scores are reported, no significant differences were established between males and females for any of the factors of the 16PF investigated in this study.

Normative data indicate a significant difference between male and female stanine scores with regard to Q₄ (free-floating anxiety). This differs from the results for the current sample in that no significant differences were established between male and female scores for the factor Q₄. Although not significant, men in the sample group actually scored higher than females indicating possible higher levels of free-floating anxiety. Similarly, normative data with regard to the Factors C and Q₃ specify significant differences between males and females with females scoring lower. The results of the sample confirm these results in that males scored higher on these factors.

Research findings on gender indicate that females normally experience higher levels of anxiety. It has been hypothesised that males typically obtain significantly lower levels of anxiety on self-report measures owing to an under-reporting of their actual levels of anxiety. Such a bias would explain findings of lower scores for men on anxiety dimensions of the 16PF and the ASI in the

sample group. However, this is not the case as male and female scores showed no significant difference for the ASI. Furthermore, although not significantly different, males actually scored higher than females on Factor Q₄ (free-floating anxiety). The results thus indicate that the males in the sample group possibly exhibit higher levels of AS and free-floating anxiety than the original norm groups. Notwithstanding the latter, it is speculated that higher ego strength scores and lower suspiciousness scores of the males in the sample group, may in fact suggest that they are more emotionally stable, mature and calm as well as being trustful, understanding, and accepting of personal unimportance. Hence it is hypothesised that the males in the sample group may have been more open to acknowledging their true levels of anxiety than the norm groups and as such, well suited to the exploration of the relationship between TA and AS.

7.2.3. Relationship between ASI Scores and 16PF Factor Scores

The third objective was to establish the degree of relationship between the ASI scores and the scores of the 16PF that tap trait anxiety namely: Q₄ (free-floating anxiety), O (guilt proneness), C (ego strength), L (suspiciousness) and Q₃ (ability to bind anxiety).

The results indicate that a significant relationship exists between all five factors scores and ASI scores. However, a positive relationship exists between the ASI and the factors Q₄, O and L, whereas a negative relationship exists between the ASI and the factors C and Q₃. According to the guidelines of Guilford (1946), it is concluded that a moderate correlation is evident between the ASI and factors Q₄ and C. Furthermore, although a low correlation is concluded between the ASI and factors O, L and Q₃, the relationship remains significant.

7.2.4. Relationship between ASI Scores and QII Scores

The fourth objective was to explore and describe the relationship between scores of the ASI and

the second-order factor QII as a measure of TA. The relationship was explored through the use of two procedures. Firstly, the coefficient of determination (r^2) was calculated in order to make r more interpretable and report the proportion of variance. The results revealed an r^2 of .236. Hence it can be reported that 24% of the variance among the ASI scores are attributable to variation in the QII scores and the vice-versa. Secondly, a multiple regression analysis technique revealed that 28% ($R^2 = .281$) of the variance in the ASI score could be explained by the combination of factors Q₄, O, C, L and Q₃. This finding concurs with the results of the coefficient of determination discussed where r^2 indicated a variance of 24%. As R^2 of the multiple regression analysis is purported to be more accurate than r^2 , it can be concluded that 28% of the variance in the ASI is accounted for by the combination of factors. Although the multiple regression analysis (R^2) indicates a higher level of variance, this level is considered to be modest. As such, this research finding is in line with the findings of Reiss (1991, 1997) and McNally (1999) who concluded that TA and AS are related but distinct constructs.

7.3. Value of the Research

The value of this research is positioned in two areas. Firstly, in the introduction of the ASI to the South African context and secondly, by adding to the debate surrounding the relationship between TA and AS.

The preceding chapters have led compelling evidence on the value of the AS construct and its operationalisation through the ASI. The ASI as a measuring instrument has proved to be effective in identifying individuals at risk of various anxiety related disorders. Very high scores are associated with the presence of insomnia, some types of substance abuse, posttraumatic stress disorder, and particularly panic attacks and panic disorder (Cox et al., 1999). Despite numerous international research findings, no such research has been conducted using South African

population groups. In addition, as far as could be established, the ASI is not available locally and was sourced abroad specifically for this study. As such, this study appears to be the first to make use of the ASI within the South African context.

South Africans are placed under increasing pressure to meet the demands of a changing society and cope with the personal impact of increasing crime, unemployment and uncertainty. As such, it is speculated that an ever-increasing number of individuals are experiencing elevated levels of anxiety. Clinicians in South African can make use of the ASI to identify individuals that display unusual sensitivity to experiencing anxiety and stress. It is these individuals in particular, that may be at risk of continued or future anxiety problems (Reiss, 1999).

The second benefit of this study lies in its contribution to the TA/AS debate. As mentioned, certain authors (e.g., Lilienfeld et al., 1996) indicated that the constructs are identical. In so doing, they brought into question the conceptual and empirical validity of AS. Other authors (e.g., McNally, 1989, 1996; Reiss, 1997) have argued for the distinction of the two constructs. Existing research has been used both to support the distinction and to argue against such distinction.

As mentioned, the principal operationalisation of TA in this debate has been the Trait Form of the State-Trait Anxiety Inventory (STAI-T; Spielberger, 1983). This measure is based on Cattell's factor analytic distinction between trait and state anxiety. Rather than use the STAI-T, this study diverged and utilised the personality measure developed by Raymond Cattell (Sixteen Personality Factor Questionnaire) to investigate the relationship between TA and AS. The Sixteen Personality Factor Questionnaire (16PF) formulates TA as a second-order personality factor (QII) comprising five first-order factors (Q₄, O, C, L and Q₃). Using two statistical procedures, it was established that the relationship between QII scores and ASI scores were modest at best. Although the current study used a different measure for TA, findings coincide with existing research and conclude that the construct of AS is not TA. Hence, the ASI as the operationalisation of AS, retains its construct

validity. Having outlined the value associated with this study, it would be pertinent to indicate related limitations. These are discussed in the section that follows.

7.4. Limitations of the Study

Limitations to the current study are related to the design, the sampling method and the measures used in study. These limitations are discussed under the relevant headings that follow.

7.4.1. Limitations of the Design

The design of the study posed a limitation in that the participants' level of TA was measured at a specific point in time. Although personality traits are by definition enduring and stable, Lazarus (2000) highlighted the importance of longitudinal research methods regarding the study of anxiety related aspects. This would enable repeat measurements of the same individuals across time and circumstances and allow for the identification of changes in the level of TA over time.

7.4.2. Limitations of the Sampling Method

A methodological shortcoming is associated with sampling and sample size. The sampling method employed was non-probability convenience sampling. Non-probability sampling implies that there is uncertainty in establishing the probability that a particular case will be selected for the sample (Harvey & McDonald, 1993). Convenience sampling refers to the sample having been selected primarily because of accessibility (Leary, 1991). Certain individuals were excluded from the study and this together with the sampling method indicates that the sample is not representative of the broader population. Furthermore, the small sample size renders the current study non-representative. This essentially means that the results obtained for this study cannot be generalised to the broader population.

Another limitation is linked to the nature of the sample. As mentioned, only student volunteers participated in the research and as such, potential biases are involved. According to Leary (1991), university students tend to be more “intelligent” than the general population and they come from middle- and upper class backgrounds (p. 90). They also tend to hold more liberal attitudes than the population in general. Furthermore, Bell (1962, in Leary, 1991) indicated that volunteers tend to differ from non-volunteers. They tend to be more unconventional, more self-confident, more extroverted and higher in need for achievement. As the respondents in this study consisted of student volunteers, this further curtails the generalisation of the results of this study.

7.4.3. Limitations Associated with the Measures

Further limitations of the research are specifically related to the measures employed in this study. Firstly, ASI normative data is not available for South African population groups. Although the sample group achieved scores that were not significantly different from available normative data, the question remains as to how representative the scores are for white South African males and females.

A limitation is related to the use of the 16PF. As mentioned, exclusion criteria did apply because of the controversy surrounding the cross-cultural use of this measure. In the changing South African society, it may be considered politically incorrect to utilise measures that exclude certain population groups. Although the use of the 16PF is justified elsewhere, the exclusion of certain population groups from the study is viewed as a limitation.

Numerous limitations associated with this study have been mentioned in the previous paragraphs. It would appear appropriate to make recommendations to overcome such restrictions in future research.

7.5. Recommendations for Future Research

The introduction of the ASI into the South African context opens the door for extensive research to be conducted on this measure. Firstly, it needs to be established if the ASI is indeed a valid and reliable measure of AS when used with different population groups. If this were the case, it would necessitate the establishment of appropriate norms for these population groupings. Furthermore, as the ASI has already been translated into Spanish, Italian, Chinese, Dutch, German, and Hebrew, research could be conducted on the appropriate translation and use of this measure with other South African language groups.

Secondly, additional research is required to clarify the use of the 16PF within a multicultural setting. Abrahams (1999) and Abrahams and Mauer (1999) have advised against such use, based on their findings of language bias. However, their research findings have been challenged and it is speculated that the differences they found were due to factors other than language (Wallis & Birt, 2003). If this situation is clarified, it is recommended that the current study be replicated with a larger representative sample of the general population. This will allow for a more sound investigation into the relationship between TA and AS.

7.6. Conclusion

This study has endeavoured to contribute knowledge by exploring and describing the relationship between trait anxiety and anxiety sensitivity. In order to obtain the empirical data needed to achieve this, a sample of student volunteers completed the 16PF and the ASI measures. The results of these measures compared favourably to normative data, indicating that the sample group was well suited for this investigation. Limitations relating to the design, sampling methodology and measuring instruments, place restrictions on the generalisability of the results, but do not negate the value of this study.

There has been extensive debate surrounding the relationship between the constructs of TA and AS. This study has established that although related, they exist as separate constructs. Not only has this study contributed towards this debate, but it has also identified areas for future research.

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Appendix A

Symbol notation and description of low and high scores for the traits identifies by the 16PF.

FACTOR	BIPOLAR TITLE	DESCRIPTION OF LOW SCORES	DESCRIPTION OF HIGH SCORES
A	Reserved – Warm	Reserved, detached, critical, cool	Outgoing, warmhearted, easy-going, participating
B	Low Intelligence – High Intelligence	Concrete-thinking, less intelligent	Abstract-thinking, bright
C	Ego Weakness – Ego Strength	Affected by feelings, emotionally labile, easily upset, lower ego strength	Emotionally stable, calm, faces reality, higher ego strength
E	Submissiveness – Dominance	Humble, obedient, easily led, docile, submissive	Assertive, independent, aggressive, stubborn, dominant
F	Seriousness – Impulsivity	Sober, serious, taciturn	Enthusiastic, heedless, happy-go-lucky, carefree
G	Low Superego – Superego Strength	Opportunistic, disregards rules or obligations lower superego strength	Conscientious, persisting, moralistic, staid, higher ego strength
H	Shyness - Boldness	Shy, timid, restrained, sensitive to threats	Venturesome, socially bold, uninhibited, spontaneous
I	Tough Mindedness – Emotional Sensitivity	Tough-minded, self-reliant, realistic, having no illusions	Tender-minded, dependent, overprotected, sensitive
L	Trust – Suspiciousness	Trusting, adaptable, free of jealousy, easy to get on with	Suspicious, skeptical, hard to fool
M	Practicality – Imagination	Practical, careful, conventional, regulated by external realities, proper	Imaginative, absent-minded, wrapped up in inner urgencies, careless of practical matters
N	Naiveté – Shrewdness	Forthright, natural, unpretentious, sentimental, artless	Shrewd, calculating, worldly, insightful
O	Untroubled Adequacy – Guilt Proneness	Placid, self-assured, confident, serene, unperturbed, self-sufficient	Apprehensive, self-reproaching, depressive, worrying, guilt-prone
Q ₁	Conservatism of temperament – Radicalism	Conservative, respecting established ideas, tolerant of tradition	Experimenting, critical, liberal, analytical, free-thinking, radical
Q ₂	Group Dependency – Self-Sufficiency	Group-dependent, "a joiner" and sound follower	Self-sufficient, resourceful, prefers own decisions
Q ₃	Lack of Control – Ability to bind Anxiety	Casual, careless of protocol, undisciplined, follows own urges, low self-sentiment	Controlled, socially precise, self-disciplined, compulsive, strong will-power, strong self-sentiment
Q ₄	Low Tension – High Tension (Free-Floating Anxiety)	Relaxed, tranquil, torpid, low ergic tension	Tense, driven, overwrought, irritable, high ergic-tension

Appendix B

BIOGRAPHICAL QUESTIONNAIRE

**Please note that all information supplied will be treated in the strictest of confidence
and will only be used for the stated research purpose.**

INSTRUCTIONS FOR COMPLETION OF THE QUESTIONNAIRE

1. Please answer all questions.
2. Indicate your answer by placing a X in the appropriate block.

1. Your age in completed years.

01	17 years	
02	18 years	
03	19 years	
04	20 years	
05	21 years	
06	22 years	
07	23 years	
08	24 years	
09	25 years	
10	Other (Specify)	

2. Please indicate your home language.

01	English	
02	Afrikaans	
03	Other	

3. Please indicate your gender.

01	Male	
02	Female	

4. Would you require feedback of results?

01	Yes	
02	No	

Please provide your name and a postal address should you wish to receive feedback.

.....

Appendix C

Reliability coefficients for first-order and second-order factors as given on the 16PF.

FIRST-ORDER FACTOR	COEFFICIENT (KR-8)
A	0.74
B	0.61
C	0.75
E	0.66
F	0.73
G	0.70
H	0.82
I	0.68
L	0.59
M	0.60
N	0.51
O	0.76
Q1	0.62
Q2	0.63
Q3	0.74
Q4	0.73
SECOND-ORDER FACTOR	COEFFICIENT (Mosier formula)
QI	0.88
QII	0.90
QIII	0.89
QIV	0.80
QVIII	0.79

Appendix D

INFORMATION AND INFORMED CONSENT FORM

TITLE OF THE RESEARCH PROJECT: THE RELATIONSHIP BETWEEN TRAIT ANXIETY AND ANXIETY SENSITIVITY

REFERENCE NUMBER:

PRINCIPAL INVESTIGATOR: Robin Farrington

ADDRESS: 503 Villa d' Este, Park Drive, Central, Port Elizabeth, 6001

CONTACT TELEPHONE NO.: (H) 041 3731372; (C) 0832367848

<p>DECLARATION BY OR ON BEHALF OF PARTICIPANT:</p> <p>I, THE UNDERSIGNED,.....(name) [I.D. No:.....] the participant of(address)</p> <p>A. HEREBY CONFIRM AS FOLLOWS:</p> <p>1. I/The participant was invited to participate in the abovementioned research project which is being undertaken by Robin Farrington of the Department of Psychology in the Faculty of Health Sciences at the University of Port Elizabeth.</p>	<p><u>Initial</u></p>
<p>2. The following aspects have been explained to me/ the participant:</p> <p>2.1 Aim: The investigator is studying the relationship between trait anxiety and anxiety sensitivity. The information will be used for research purposes only.</p>	<p><u>Initial</u></p>
<p>Procedures: I understand that it will take approximately 45 minutes to complete the Biographical Questionnaire, Anxiety Sensitivity Index and Sixteen Personality Factor Questionnaire. I am under no obligation to provide my name should I desire no feedback about myself. Should I require feedback, I understand that results will be communicated to me via a summary sheet upon my request.</p>	<p><u>Initial</u></p>
<p>2.2 Risks: I understand that the research will not put me in any form of risk.</p>	<p><u>Initial</u></p>

