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PERSONALITY AND BODY PERCEPTION OF STUDENTS WITH A PROPENSITY TO DEVELOP BINGE EATING DISORDER

BY SAINTHA MAISTRY

A DISSERTATION SUBMITTED IN FUFILLMENT OF THE REQUIREMENT FOR THE DEGREE, MASTERS OF ARTS IN THE FACULTY OF HUMANITIES, UNIVERSITY OF THE WITWATERSRAND.

DECLARATION

I, **Saintha Maistry** state that to the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made. This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signed:  Date: 25 November 2012

DECLARATION

I declare that the dissertation submitted is my own original work and careful attention has been taken to avoid breach of copyright.

Signed: Saintha Maistry Date: 25 November 2012

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I wish to thank my supervisor Adilia Silva for giving me the chance to pursue this degree and believing in me. I wish to thank all those kind students who took the time to participate in my study. Finally, i dedicate this to the memory of my family members who have passed away too soon. My dear Cuddles and to the memory of my gran.

Abstract

The primary aim of this study was to investigate the relationship between binge eating disorder and personality traits. Studying personality characteristics may eventually enable us to identify individuals at heightened risk for developing binge eating, and to use this information to design more effective prevention and early intervention strategies. 138 females and 42 males participated in this study. Questionnaires using the EDI, EAT-26 and 16PF as well as an interview schedule were adopted for the study. Results revealed that there appeared to be a significant positive relationship between the EAT-26 and factor O (apprehension-self assured) and factor Q 4(tension-relaxed). There appears to be a significant positive relationship between the EDI and factor I (sensitive versus tough minded), factor L (suspicious versus accepting), factor O (insecure versus complacent) and factor Q4 (tense versus relaxed and easy going). Factor O (apprehension-self assured) appears to predict the scores obtained on the EAT-26 and the propensity to develop binge eating disorder. Factor O (insecure versus complacent) and Q4 (tense versus relaxed) were able to predict the scores on the EDI and the propensity to develop binge eating disorder.

Secondary aims of the study revealed that there appears to be a relationship between body image disturbance and the total EAT-26 and EDI scores respectively. This means that participants scoring high on the body dissatisfaction subscale of the EDI will also score higher on the EAT-26 total. There appeared to be a positive relationship between gender of the participants and the total scores of the EAT-26 and EDI respectively.

There were 2 interviews carried and the results of the interviews reinforced the quantitative data and previous research on binge eating disorder (Belangee et al, 2003) that personality traits are link to the development of binge eating disorder.

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Introduction

In recent years, the role of food, a once primarily source of energy and nourishment has spawned a new hybrid of eating pathologies with serious and deadly ramifications (Orbach, 1987; Roth, 1982; Vervaet, 2004). Much is known about the effects of anorexia nervosa and bulimia nervosa. However, in the majority of eating disorder cases, there are individuals who present with mixed patterns of eating dysfunction which results in serious physical and psychological complications (DSM IV-TR, 2000; Fairburn, 1995; Turner & Waugh, 2004). The relative severity of these conditions implies the need to improve research on the eating pathology in order to determine the vulnerable traits and belief practices that work to promote an unhealthy relationship with food and weight (DSM IV-TR, 2000; Turner & Waugh, 2004).

It is recognised that disordered eating covers the broad spectrum of eating behaviours, including eating disorders (Calderon, 2006; DSM IV-TR, 2000). Many of those who display disordered eating symptoms do not meet the current DSM IV-TR criteria for either anorexia nervosa or bulimia nervosa and may be classified as eating disorder not otherwise specified (EDNOS) (DSM IV-TR, 2000). The Diagnostic and Statistical Manual of Mental Disorder (DSM IV-TR, 2000) lists EDNOS as a category that does not meet the specific requirements for an eating disorder. Binge eating disorder is currently classified within the EDNOS grouping as episodes of recurrent binge eating in the absence of inappropriate compensatory behaviours (DSM IV-TR, 2000). It is estimates that EDNOS account for about 50% of the population of eating disorder diagnoses

(Calderon, 2006). This study is not interested in investigating individuals with specific diagnostic criteria's of eating disorders, rather the patterns of maladaptive behaviours and attitudes related to the development of disordered eating will be investigated.

In many cases, eating disorders are often not noticeable and therefore not treatable until they become more advanced. Disordered eating is probably a precursor to full fledged eating disorders (Calderon, 2006). Therefore, this research chose to investigate eating disordered related attitudes and behaviours among males and female adolescents in order to identify possible triggers for the development of eating related pathology, including eating disorders. In particular, the study will focus on personality and body perceptions that may be involved in promoting dysfunctional eating habits and attitudes. In essence, recognizing the beliefs systems and behaviours of eating dysfunction in the early stages of development may be an essential means of reducing the progression of eating disorder symtomatology and improve chances of preventing the onset of eating disorders altogether (Calderon, 2006).

Therefore, in order to effectively understand the nature of eating pathology, the biopsychosocial model will be the theoretical framework utilised for the research as the dimensional units within this model (biological, psychological and sociocultural tenets) are perceived as essential in providing a comprehensive discussion and understanding of the potential risk factors in the development of eating dysfunction (Eades, 1993). Therefore, the primary aim of this research will investigate whether certain personality traits are associated with the propensity to develop eating pathology. Furthermore, the

secondary aim will access whether body perceptions are related to the propensity to develop eating pathology. In addition, age was considered as well as gender, race and socio-economic status. In essence, the study investigated the role of personality traits, body perceptions, age, gender, race and socioeconomic class in predisposing students to develop eating pathology.

The following chapters will employ this multidimensional model (biopsychosocial framework) to explore the relationship personality traits and body perceptions have in those students inclined to develop eating pathology. In chapter one, it will be necessary to examine the biopsychosocial model as it has been comprehensively used to explain the aetiological development of eating disorders. The term disordered eating is more inclusive and includes such behaviours as meal skipping, binging, use of laxatives, purging and food restriction (Calderon, 2006). Therefore, the various eating behaviours and practices that may be classified as dysfunctional eating will be considered in chapter one by focusing on the clinical descriptions of eating disorders (anorexia nervosa, bulimia nervosa, binge eating disorders, EDNOS).

Thereafter, the aetiology of eating pathology will follow in chapter two in order to establish a multidimensional model of disordered eating where the biological tenet of age, the sociocultural factors of gender, race and socioeconomic status and the psychological aspects of personality and body perceptions will be considered. Consistent with the primary aim of this discussion, the research will include a section on the relationship

between personality and eating pathology under the psychological model in order to demonstrate the link between personality traits and eating pathology.

Having already discussed and expanded upon eating pathology in chapter one and two, it will be necessary to do the same with personality, in order to fully understand the relationship between personality and eating dysfunction. Therefore, in chapter three, the focus of attention will be on personality. This chapter will provide an overview of existing personality theories and focus attention on the personality theory (Cattell's trait theory) that was employed for the present research.

In order to carry out the primary and secondary research aims, it will be necessary to provide the research methods, instruments and procedure that were employed for the investigation. This will be dealt with in chapter four, where the research design will be presented. Thereafter, the results of the research will be provided in chapter five as a basis for the discussion. In chapter six, the analysis of the results will be discussed according to the biopsychosocial model in order to demonstrate the appropriateness of the model in investigating the primary and secondary research aims of this study.

The results and discussion of the research aims will reveal specific limitations, implications and recommendations and this will be dealt with in chapter seven and eight, respectively. Finally, chapter eight will conclude with a general overview of the entire research and an overall summary of the primary and secondary research findings.

Chapter 1: Eating disorders

1.1 Introduction

Eating disorders may appear to be associated with a preoccupation of food and weight; however, they are most often about much more than food. It is necessary when trying to understand the aetiology of an eating disorder to divide up the facets that make people vulnerable to developing the condition. Eating disorders are complex conditions that can arise from a variety of potential causes (Bailey, 1991; Davies, 1995; Orbach, 1993; Stuppy, 2003; Roth, 1982; Webber, 1994). Once developed, they can generate a self-perpetuating cycle of physical and emotional destruction.

Many people with eating disorders may share similar personality traits (Kriepe & Birndorf, 2000). Furthermore, the main cognitive disturbances observed in eating pathology relates to body weight and shape (Jones, Leung & Harris, 2007). Therefore, this research was primarily interested in investigating whether personality has an influence in the development of eating pathology. The secondary aim wished to establish if body perceptions had an influence on the propensity to develop eating pathology. In addition, the research sought to investigate the influence of age, gender, race and socio economic class in the propensity to develop eating pathology.

In order to fully investigate these research aims, it was necessary to incorporate the biopsychosocial model as it could account for the aetiology and understanding of eating

pathology. According to the model some of the fundamental factors that contribute to the development of eating disorders arise from a combination of biological, psychological and social factors (Eades, 1993; Costin, 1999).

Therefore, the integration of all three dimensions in the pursuit of understanding the aetiology of eating pathology falls within the realms of the biopsychosocial model. The following discussion will provide the basic definition and characteristics of the biopsychosocial model. In addition, this model will set the framework for a systematic discussion of the research objectives related to the understanding of eating related pathologies.

1.2 The Biopsychosocial model

The biopsychosocial model is the process of looking at the mind and the body as two fundamental systems that are interlinked. The psychiatrist George Engel (1977, 1980) proposed this model as integral to understanding various conditions and illnesses. The biological, psychological and social factors of the biopsychosocial model are seen as systems of the body that can affect the mind and the mind can in turn affect the body Engel, 1980). Furthermore, it is well established that many illnesses display multi factorial aetiologies and symptoms and the manifestation of these conditions require the complex interplay of factors that can be classified as biological (genetic), psychological (stress), and social (interpersonal relationships) (Mechanic, 1969; Schlebusch, 1996).

1.2.1 The principles and practices of the biopsychosocial model

It was George Engel who believed that to adequately understand and respond to the needs of patient's suffering, it is necessary for clinicians to attend simultaneously to the biological, psychological and social dimensions of the illness. In other words, a more holistic alternative needs to be incorporated into treatment (Carrio, Suchman & Epstein, 2004; Engel, 1980; Schlebusch, 1996). The present interpretation of the biopsychosocial model refers to a primarily aetiological reference where biological, psychological and social factors are implicated in the cause of medical problems. This ideal was perceived as a scientific approach that attempted to reverse the dehumanisation of medicine and disempowerment of the patient. It introduced a more humane alternative where qualities such as empathy and compassion were brought into medicine. Engel endorsed a complexity view where different levels of the biopsychosocial hierarchy (biological, psychological and social tenets) could interact and influence behaviour (Carrio et al., 2004; Engel, 1980).

For example, in a practical setting, health care officials need to assist patients in becoming whole with respect to all aspects of life (Schlebusch, 1996). The physical, psychological, social, spiritual and cultural contexts need to be evaluated (Carrio et al., 2004; Engel, 1980). Furthermore, the biopsychosocial model is seen as both a philosophy of clinical care and a practical guide. By incorporating the philosophical ideology, a clearer understanding is presented on how suffering, disease and illness are affected by multiple levels of organisations. At the practical level, it is a means to understand the

patient's subjective experience as an important tool in the accurate diagnosis, health outcomes and level of care given to individuals (Yeheskel, Biderman, Borkan & Herman, 2002). There are significant pillars of the biopsychosocial clinical practice which relates to self-awareness, empathy, curiosity and emotions to assist with diagnosis and forming therapeutic relationships. According to the model, the development of medical problems may result from the interaction of diverse causal factors which are found within the dimensions of the biopsychosocial model (Yeheskel et al., 2002).

By adopting this systematic perspective, a broader, more comprehensive perception into the causes of pathology is provided. This model generates a new state of health through a working partnership between the patient and health care workers. This process involves a multilateral collaboration of the patient, health care worker and the multiple contexts of the environment in order to achieve a state of balance and harmony (Goetz & Caron, 1999).

1.2.2 Criticisms of the biopsychosocial model

One major criticism of the model is that it does not maintain predictive values (McLaren, 1997). This means that researches who gather data from a variety of theoretically unrelated fields will not be able to test the basic assumptions of their research (McLaren, 1997). Furthermore, it is believed that gathering data along the biological, psychological and social lines may produce information that do not relate to each other. Therefore, it is necessary to have an integrating theory in order to derive associations between different

classes of information. It seems that the model is supported more in theory rather than in practice because it is mainly used in academic institutions rather than clinical practices (Munitz & Rudnick, 2000; Weston, 2005). When incorporating the biological, psychological, and social tenets together, it is difficult to achieve a collective understanding and appreciation of the constant interweaving of these elements throughout a person's ongoing life (Davidson & Strauss, 1995). In addition, the biopsychosocial model is not designed into a well-formulated theory; however, it is widely used and acceptable for teaching purposes (McLaren, 1997).

Although there are many criticism directed against the biopsychosocial model, it cannot be denied that the scope of this model is virtually limitless and it can contribute to the aetiological explanation of pathology (Mechanic, 1969). This model will be used as a basis in the discussion of the relationship between personality and body perceptions in the onset of eating pathology. Considering, that eating disorders are perceived as complex conditions with multidimensional factors (biological, psychological and social) implicated in predisposing and precipitating the eating pathology (Polivy & Herman, 2002; Moulton, Moulton & Roach, 1998; Schlozman, 2002) the following section will present an overview of the common eating disorders, anorexia nervosa and bulimia nervosa in order to show a link with eating disorders not otherwise specified (EDNOS) and provide further insight into the various behaviours, attitudes and beliefs that constitute as eating related pathology. This detailed discussion will be presented in order to expand the understanding of this complex construct and its relation to the biopsychosocial model.

1.3 Eating disorders

Since the time of the Homo erectus, a million years ago on the African continent, humans have developed practices to conserve food for energy, once it has been eaten (Vieweg, 2004). In western society, this normal biological necessity to eat and retain calories has become perversely distorted and has created a conundrum of disorders and conditions that are unique and tragic in their own right (Fairburn, 1995; Mond et al., 2006).

A thorough examination of these eating disturbances requires a systematic discussion of the diagnostic categories listed under eating disorders (DSM IV-TR, 2000). In particular, EDNOS, a less researched phenomenon that is believed to be the most common of the eating disorders affecting millions of people, will be discussed in relation to anorexia nervosa and bulimia nervosa in order to draw on similarities within the categories (Costin, 1999; Fairburn, 1995). In addition, the related association and influence of binge eating to anorexia nervosa as well as bulimia nervosa will prompt a further investigation of binge eating disorder to determine the full description and analysis of binge eating symtomatology. Firstly, it is necessary to review the commonly researched eating disorders, anorexia nervosa and bulimia nervosa to provide further insight into the nature of EDNOS.

1.3.1 Anorexia nervosa

Anorexia nervosa is a disorder that was first discovered by the English physician Sir William Gull in 1874 (Bruch, 1974; Costin, 1999; Orbach, 1993). The coining of the term ‘nervous consumption by Richard Morton established the syndrome of anorexia nervosa (Button, 1993; Costin, 1999). The word anorexia is of Greek origin which when translated means deprivation or a lack of appetite (Bruch, 1974; Costin, 1999). It has since become apparent that the term anorexia is a misnomer for the disorder because individuals inflicted with this condition often are consumed with thoughts of food.

The condition of anorexia nervosa often affects females. These individuals deny their body of basic sustenance even when driven by hunger pangs. It is only during the last stages of severe anorexia that the sufferer will loose their appetite (Costin, 1999). There is no one cause for anorexia nervosa. Studies indicate that a multidimensional perspective be considered in the aetiology of the condition (Moulton et al., 1998; Polivy & Herman, 2002). Therefore, an eclectic consideration of the biological, psychological and social variables are essential for understanding the multifaceted nature of anorexia nervosa (Moulton et al., 1998; Polivy & Herman, 2002).

1.3.1.1 Clinical description[1]

According to Eades (1993) anorexia nervosa is characterised by a major distortion in body perceptions. As the disorder progresses, the inflicted individual becomes extremely thin to the point of emancipation. The anorexic sufferer will perceive the body or parts of the body as fat despite its relatively thin appearance. This type of anorexic behaviour usually begins in early adolescent whereby slight weight gain triggers a desire to be thin and gradually develops into an obsession with weight and dieting (Costin, 1999).

In most instances, the sufferer is not aware that their behaviour and preoccupation with food is unusual. Core features of anorexia nervosa include weight loss and a morbid fear of becoming fat and psychological disturbances (feelings of meaninglessness, low self esteem, failure) (Bruch, 1974; Button, 1993; Vieweg, 2004). As the disorder progresses anorexics will refer to all foods as fattening (Costin, 1999). It is hypothesised that anorexia nervosa is the failure to maintain body weight at above 85% of the expected weight for age and height as measured by the BMI (Body Mass Index values) (Schlozman, 2002). The BMI is an appropriate measure of body fat based on height and weight and it applies to both men and women. The metric formula is BMI = (kg/m^2) Height in kilograms / height in $meters^2$. It can be observed from Table 1 below that a BMI of below of 18.5 is considered underweight and this is a characteristic feature of anorexia nervosa where the sufferer refuses to maintain weight in the normal range which is 18.5-25 (DSM IV-TR, 2000). It is significant that 95% of American adolescent girls wanted to weigh less that the median BMI of 20.5kg/ m^2 (Sheffield, Tse & Sofronoff,

[1] Refer to Appendix A for the DSM IV-TR diagnostic criteria of anorexia nervosa.

2005). However, males appear more satisfied with their current weight and body shape (Fallon & Rozin, 1985). Therefore, it appears that many more females than males place unrealistic demands on their body shape and size in the quest to be 'super thin', which may account for the relatively high rates of eating disorders among females (Bruch, 1974; Costin, 1999; Schlozman, 2002).

Table 1 The Body mass index scale

BMI	**Weight status**
Below 18.5	Underweight
18.5 -24.9	Normal
25 - 29.9	Overweight
30 & Above	Obese

1.3.1.2. Sub-types of anorexia nervosa[2]

The fundamental feature of anorexia nervosa is a strong desire to control eating behaviours. Anorexics are very fearful of loosing that control and work very hard to fight against the natural bodily instinct by starving themselves (Costin, 1999). There are two subtypes of anorexia nervosa; restricting types, which only involves incidents of anorexia nervosa (restrictive eating) and the binge purge type which is associated with binge eating or purging behaviours (self induced vomiting, misuse of laxatives, abuse of diuretics or enemas). The binge purge type anorexia nervosa is similar to bulimia nervosa with the exception that binge purge types are below the normal weight in comparison to bulimia

[2] Refer to Appendix A for further information on anorexia nervosa sub-types.

sufferers who remain within the normal weight range (Kaplan et al., 1994; DSM IV –TR, 2000).

1.3.1.3 Relationship with EDNOS[3]

By definition, many individuals receiving an EDNOS diagnosis have in some way not fulfilled the requirements for a full diagnosis of anorexia nervosa or bulimia nervosa (Nollett & Button, 2005). According to the DSM IV-TR (2000) these individuals who present with anorexia nervosa symptoms may not meet full criteria of the disorder because they maintain regular menses or their body weight is within the normal range.

The implication of this category suggests that EDNOS individuals differ from full syndrome patients in the severity of their eating pathology (Nollett & Button, 2005). However, research refutes this claim by suggesting that EDNOS patients appear to present with similar levels of psychological deficits as anorexia nervosa and bulimia nervosa patients (Button, Benson, Nollett & Palmer, 2005; Mond et al., 2006; Nollett & Button, 2005). Considering that treatment provisions are often based on a full diagnosis of an eating disorder, in many cases those individuals with EDNOS are perceived as lower priority and not provided with equitable treatment intervention options (Nollett & Button, 2005).

[3] Refer to Appendix C for a DSM IV-TR diagnostic criteria of Eating disorders not otherwise specified (EDNOS)

In many instances, EDNOS individuals experienced similar physical and psychological problems as those individuals diagnosed with anorexia nervosa (Nollett & Button, 2005). The effects of starvation take an overwhelming toll on the body and psychological functioning. The following section will provide an overview of the debilitating effects of anorexia nervosa (Bruch, 1974; Costin, 1999).

1.3.1.4 Physical and psychological consequences of anorexia nervosa

The effects of starvation are associated with marked psychological changes such as rising anxieties and resentment (Bruch, 1974). In addition, social isolation prevents the anorexic from developing experiences and relationships with others (Bruch, 1974; Schlozman, 2002). The anorexic sufferer, because of extreme weight loss will develop amenorrhea (the cessation of menstruation), cold intolerance, dry skin often covered by fine body hair, cold and blue extremities, bradycardia (a slow heart rate, less than 60 beats per minute) and hypotension (low blood pressure) (Button, 1993; Bruch, 1974; Costin, 1999).

Considering the physical and psychological ramifications of the disorder, the apparent distress associated with the disorder is evident and the sufferer is often intertwined in a web of pain, despair and isolation (Bruch, 1974). In a significant proportion of cases, the disorder can be fatal and a person can die from complications as a result of severe emancipation (Button, 1993).

Having discussed anorexia nervosa it is fitting to consider the second most common eating related pathology, bulimia nervosa as it provides a fundamental insight into the nature of abnormal eating behaviours. In addition, the role of binge eating in bulimia nervosa will be discussed to highlight the relationship that exists with binge eating behaviours (Costin, 1999; Spinella & Lyke, 2004).

1.3.2 Bulimia nervosa

The word bulimia originated from the Latin word, meaning 'hunger of an ox' (Costin, 1999). It was not until the late 1970's that Russell described and named this variant of anorexia nervosa (Agras, 1987). Similar to anorexia nervosa, bulimia nervosa is significantly more common in females than in males but its onset is often later in adolescent (Kaplan et al., 1994). The essential feature of bulimia nervosa includes recurrent episodes of binge eating and self induced vomiting and/or repeated use of laxatives, diuretics, enemas, fasting, excessive exercise and other medication to prevent weight gain (Sohn, 2002; Vieweg, 2004). The binges associated with bulimia nervosa can be intense whereby the food is eaten secretly and rapidly and is sometimes not even chewed (Gerlinghoff, Gross & Backmund, 2003; Kaplan et al., 1994). The course of the disorder can be chronic or sporadic (Fairburn, Cooper, Doll, Norman, & O'Connor, 2000). The specific cause of the disorder is not known however bulimia nervosa is perceived as a multi-dimensional disease, with psychological, biological, familial, and cultural factors contributing to its development and onset (Bonne, Lahat, Kir, Berry, Katz & Bachar, 2003; Polivy & Herman, 2002; Wells & Sadowski, 2001).

1.3.2.1 Clinical description[4]

The bulimic individual appears physically normal but may exhibit impulsive behaviours such as stealing, abuse of drugs and have high rates of alcoholism. Most bulimic nervosa patients are sexually active, even promiscuous in comparison to anorexic patients who are not interested in sex. Bulimia nervosa occurs in persons with high rates of mood disorders and impulse control disorders. It is also reported to occur in persons at risk for substance related disorders and a variety of personality disorders (DSM IV -TR, 2000; Kaplan et al., 1994).

As bulimia nervosa progresses and develops, it becomes a means of controlling and regulating moods such as sadness and happiness (Costin, 1999). Most bulimics have a history of weight fluctuation and some are overweight. In most instances, the bulimic sufferer will view the disordered eating behaviour as distinctly abnormal (Eades, 1993). Individuals with this disorder will use their illness to create a protective area in which they can lead a secret life according to their own rules. For a while this eating disorder represents a 'gain' for the patient because it can assist in developing an increased sense of self esteem. It can further aid in permitting patients to avoid problem and adversities of daily life (Gerlinghoff et al., 2003).

[4] Refer to Appendix B for the DSM IV –TR diagnostic criteria of bulimia nervosa.

1.3.2.2 Subtypes of bulimia nervosa[5]

There are two subtypes of the disorder, the binge purge subtype and the non-purge subtype. The binge purge subtype engage in binge eating and resort to compensatory means (laxative abuse, vomiting) in order to prevent weight gain. The non-purge sub-type is liken to that of anorexia nervosa, however, non-purge type bulimics are within normal body weight when compared to anorexic sufferers who are perceived as below the normal weight requirement (DSM IV-TR, 2000; Kaplan et al., 1994).

1.3.2.3 Relationship with EDNOS

Bulimia nervosa tendencies (binge eating and inappropriate compensatory mechanisms) are categorised as EDNOS if the frequency of behaviours occur less that twice a week, if small portions are eaten by individuals of normal body weight before purging or whether individuals engage in recurrent episodes of binge eating[6] (DSM IV-TR, 2000). According to the DSM IV-TR (2000) there is insufficient data to make binge eating disorder a distinct Axis 1 diagnosis. Investigations are underway to determine whether binge eating disorder is another variant of the non-purge bulimia nervosa or an autonomous eating disorder (Hales & Yudofsky, 2004). It is apparent that a diagnosis for bulimia nervosa is related to the severity of the binge and purging behaviours.

[5] Refer to Appendix B for further information on bulimia nervosa subtypes.
[6] For a full discussion on binge eating disorder, refer to page 21.

According to Hales and Yudofsky (2004) bulimia nervosa is a word that is closely synonymous with binge eating. It describes the behaviour of binge eating and a fear of not being able to prevent voluntary eating. According to Costin (1999) bulimia sufferers exist in an environment that is between binge eating and starvation. It is out of sheer desperation that these individuals will purge. It is evident that the frequency and intensity of the bingeing differentiates EDNOS and anorexia nervosa from bulimia nervosa (Costin, 1999). The defining criteria that sets bulimia nervosa apart from binge eating disorder is the use of compensatory measures of ridding the food already consumed during a binge (vomiting, laxative abuse) (Ford-Martin, 1999). Binge eaters, associated with EDNOS do not engage in this form of behaviour, but resort to binge eating to the point of becoming uncomfortably full.

Katzman and Wolchik (1984) and Perosa and Perosa (2004) suggested that there is a clear distinction between bulimia nervosa and binge eating disorder as reflected in the behaviour and personality traits of the two groups. However, most people with bulimia nervosa have similar thought patterns and experiences to those of anorexia nervosa. The drive for thinness and the fear of being fat appears in both disorders and while body image distortion appears in bulimia nervosa, it is usually not to the same degree as in anorexia nervosa (Costin, 1999; Bonne et al., 2003). In many instances, there are calls to re-evaluate the existing diagnostic boundary of bulimia nervosa and EDNOS, specifically binge eating disorder, as research has highlighted that both bulimia nervosa and EDNOS appear to share common behavioural traits and belief systems (Grange et al., 2006).

The ramification of the bingeing and purging behaviours associated with bulimia nervosa has resulted in serious physical and psychological damage. The following section will focus on the effects of bulimia nervosa to demonstrate the extent of destruction that can occur if the disorder is not effectively treated.

1.3.2.4 Physical and psychological consequences of bulimia nervosa

The complication associated with bulimia nervosa are severe and life threatening. Common medical problems reported include teeth decay, malnutrition, dehydration, stomach ruptures, intestinal problems and serious heart, liver and kidney damage (Hughes, 2005). Patients with the purge sub-type of the disorder report certain medical complications such as hypokalemia (low levels of potassium) from vomiting or laxative abuse. The individuals who repeatedly vomit are at risk for gastric and esophageal tears, although these complications are rare (Kaplan et al., 1994). In addition, the psychological effects of bulimia nervosa include low self esteem feelings of shame, guilt and depression (Hughes, 2005; Schlozman, 2002). Overall, bulimia nervosa seems to have a better prognosis than does anorexia nervosa (Kaplan et al., 1994). However, one cannot neglect the seriousness of the disorder.

The discussion so far has provided an overview of anorexia nervosa and bulimia nervosa. Consistent through the discussion was the varying role of EDNOS, in particular binge eating in anorexia nervosa and bulimia nervosa. In light of this association, the following discussion will focus on the relatively less researched phenomenon of binge eating

disorder. Unlike bulimia nervosa, there are individuals that engage primarily in binge eating without compensatory means to get rid of the food consumed. This condition may become so severe that the individual can eventually be rendered imprisoned in the cycle of binging and every aspect of life is disrupted or destroyed (Grilo & Masheb, 2000; Rieger, Wilfley, Stein, Marino & Crow, 2005). The next section will explore binge eating disorder in greater detail and discuss issues around the definition, clinical description, characteristics of a binge and complications associated with this disorder.

1.3.3 Binge eating disorder

In the late 1980's studies on obesity and bulimia nervosa demonstrated that many people engaged in binge eating without maintaining any of the clinical descriptions for bulimia nervosa or anorexia nervosa (Costin, 1999; Fairburn, 1995). It was not until the research of Dr Robert Spitzer that a new disorder called 'pathological overeating syndrome' was used to describe individuals who compulsively engaged in binge eating (Costin, 1999). The coining of the term binge eating disorder as a distinct syndrome was later adopted by the DSM-IV–TR (2000). It has since evolved into a clinically diagnosable eating disorder with distinct symptoms that are exclusive to binge eating disorder (DSM IV-TR, 2000; Perosa & Perosa, 2004).

1.3.3.1 Clinical description[7]

Binge eating is listed as a proposed disorder in need of further study (DSM IV-TR, 2000). The condition is characterised by recurrent episodes of consuming unnaturally large amounts of food (binge eating), a lack of self-control during binge-eating episodes, and marked distress following each episode. The binges occur within a two hour time frame but this has been expanded to incorporate 'binge days' as the unit of measurement (Skunkard & Allison, 2003) and the individuals will not stop until they are uncomfortably full (Cooper, 1995; Schwartz, 1998). According to Crandall (1988), binge eating, is an acquired pattern of behaviour and can continue throughout a person's life (Hogan & McReynolds, 2004). Furthermore, Gold, Frost-Pineda and Jacobs (2003) likens it to drug addiction whereby the binge eater displays physical symptoms such as palpitation, sweating and difficulty breathing (Cooper, 1995).

According to research, binge eating disorder is more common in females, (Szabo & le Grange, 2001) however; there is an increase in the number of males diagnosed with binge eating disorder than the traditional eating disorders anorexia nervosa and bulimia nervosa (Freeman, 2004). Therefore, the present investigation looked at both males and females participants inclined to develop eating related pathology.

[7] Refer to Appendix C for DSM IV-TR diagnostic criteria of binge eating disorder.

1.3.3.2 Characteristics of binge eating

There is little consensus concerning the amount of food intake required to constitute a binge, especially when the binge can last the entire day (Skunkard & Allison, 2003). However, it is suggested that a binge represents a larger portion of food, greater than what most people would eat in the same time under similar circumstances (DSM IV-TR, 2000; Hales & Yudofsky, 2004, Roth, 1982). It is stipulated that binges must be present twice per week for a period of six months for a full diagnostic determination of binge eating disorder (DSM IV-TR, 2000). The individuals must express a marked distress over these behaviours (Skunkard & Allison, 2003).

Behaviour characteristics of binge eating are the hoarding of high calorie foods, eating late at night, eating when not hungry and coping with stress, sadness and disappointments by eating (DSM IV-TR, 2000; Schwartz, 1998; Roth, 1982). Fairburn (1995) suggested that due to feelings of shame, individuals strive to hide their condition. Therefore, many binge eaters are expert at concealing their binge eating habits that even close family members are unaware of their condition (Marcus, Marsha & Kalarchian, 2003; Schwarze, Oliver & Handal, 2003). These individuals have developed the skills and behaviours to avoid detection by binge eating in areas, where no one is around, for example the bathroom or bedroom.

Most individuals with binge eating disorder have a long history of dieting attempts and feel overwhelmed about their inability to control food intake (Yanovski, Nelson, Dubbert

& Spitzer, 1993). The effort at restricting calories is very difficult and many binge eaters opt to simply give up. Those that do not follow the diet patterns report higher rates of self-loathing, disgust about body size, depression, anxiety, somatic concerns and interpersonal sensitivity. In addition, individuals who binge eat report a history of childhood obesity and familial eating problems (Lamerz et al., 2005; Strieg-Moore, Pike, Fairburn, Wilfley, Dohm & Kraemer, 2005).

In addition, people who binge eat display distressing symptoms of anxiety and worry (Cooper. 1995). Eating alone because of embarrassment of how much one is eating (DSM IV-TR, 2000; Appolinario & McElroy, 2004) can create intolerable feelings of hopelessness, abandonment, despair and anxiety (Cooper. 1995). Furthermore, many people who binge eat report feeling extremely angry with themselves. It has been reported that some binge eaters will cut themselves as a violent expression of anger or as a form of tension release (Cooper. 1995). Despite the emotional component to binge eating, many of those with this condition have great difficulty in identifying what they do feel. Alexthymia is expressed where the individuals have enormous difficulty in knowing what they feel and want for themselves (Schwarze, 2003). Binge eaters experience emotions such as isolation, extreme mood swings, low self-esteem, self-hatred, and depression. Furthermore, these individuals who are trying to lose weight may blame their perceived failure on a lack of willpower (Stuppy, 2003).

1.3.3.3 Description of a binge

Binges are characterized by eating in rapid succession and frequently swallowing without chewing food (DSM IV-TR, 2000; Fairburn, 1995; Rieger et al., 2005). The quality or taste of food is not important rather the fundamental feature is that the food be highly dense in calorie content and have a texture that aids in rapid eating (Hales & Yudofsky, 2004). The binge is done mindlessly so that the person may not even remember eating the food in large quantities (Stuppy, 2003). The following is an excerpt describing the feelings associated with binge eating as provided by Linder (1959, p, 107-151);

> '*I think it begins with a feeling of emptiness…The moment I become aware of the hole opening inside I'm terrified. I want to fill it. I have to. So I start to eat. I eat and eat-everything, anything I can find to put in my mouth. It doesn't matter what it is, so long as it's food and can be swallowed. It's as if I'm in a race with the emptiness. As it grows, so does my hunger. But it's not really hunger, you see. It's a frenzy, a fit, something automatic and uncontrollable. I want to stop it, but I can't. If I try to, the hole gets bigger, I become idiotic with terror, I feel as if I'm going to become nothing, become the emptiness- get swallowed up by it. So I've got to eat'*

From this description, it is apparent that binge eating is characterized by a loss of control of eating, a feeling that one cannot stop eating or control what or how much they eat. Furthermore, binge eating appears to be associated with intense emotions that are difficult to perceive and understand (Linder, 1959). Therefore, there are certain common feelings

and behaviours that occur prior, during and after a binge that forms a pattern in the individual with binge eating disorder.

Prior to a binge, an individual will fixate, anticipate and fantasise about the binge. There is no thought or anxiety about the consequences during the binge episode, regardless of past experiences of binge eating (Cooper, 1995). Fairburn (1995) describes feelings of desperation as individuals receive a powerful compulsion to eat. This drives them to take food belonging to other people, steal from stores or eat discarded food. Most binge eaters view such behaviours as shameful disgusting and degrading (Fairburn, 1995).

During the binge, there is a pleasurable, almost sensual feeling of relief. The taste and texture of the food may seem enjoyable (Fairburn, 1995). A person will eat almost mechanically and barely chew their food. Some report a dissociative quality such as feeling numb or in a trance like state while in the process of binge eating (DSM IV-TR, 2000; Fairburn, 1995). Tension is relieved and the individual will explain that they experience a hypnotic sense of relief and pleasure (DSM IV-TR, 2000; Fairburn, 1995; Garmman & Makinen, 1994; Meyer & Waller, 1998).

After the apparent binge, the person is left with feelings of intense regret and depression over their behaviour. They feel quite desperate and hate what they have done (Cooper, 1995). According to Hales and Yudofsky (2004) feelings of guilt, depression and self disgust follow after the binge eating episode. It is significant that the description and

characteristics of the binges as experienced by binge eating disorder are similar to the experiences of individuals with bulimia nervosa (DSM IV-TR, 2000; Fairburn, 1995).

1.3.3.4 Binge eating and obesity

One of the factors implicated in the onset of obesity is binge eating disorder (Devlin, Goldfein & Bobrow, 2003; French, Jeffery, Sherwood & Neumark-Sztainer, 1999). However, statistics indicate that not all people who binge eat are overweight. However, because of the nature of the condition, most binge eaters are relatively overweight or obese (BMI 29 and over) (Becker, Burwell, Navara & Gilman, 2003; Chua, Touyz & Hill, 2004; Hales & Yudofsky, 2004; Webber, 1994). For instance, the average individual enrolling in weight loss programmes report instances of binge eating (Ford-Martin, 1999). In clinical settings, the appearance of the binge eater usually presents with varying degrees of obesity (Becker et al., 2003; DSM IV-TR, 2000; French et al., 1999).

Literature reports that there is a positive relationship between the severity of binge eating and increase body weight (Picot & Lilenfeld, 2003). For instance, Mussell, Mitchell, de Zwaan, Crosby, Seim and Crow (1996) suggested that obese participants with binge eating disorder report an earlier onset of binge eating, increased food cravings, increased diet pill use, decreased fasting, greater fear of gaining weight, increased negative body perception, and increased depressive symptomatology and general psychopathology.

1. 3.3.5 Physical and psychological complication of binge eating

Binge eating can hamper relationships, take up a lot of productive time, become costly, and disrupt healthy living (Schwarze et al., 2003). If left untreated, the medical problems associated with binge eating can be severe. The excess calories are then stored in the body as fat, which as already discussed often results in obesity which is responsible for numerous medical related problems such as diabetes, high blood pressure, stroke, gastric reflux disease, mellitus (high sugar levels), cardiovascular disease, cancer and sleep apnea (sleep disorder where breathing is disputed) (DSM IV-TR, 2000; Schwarze et al., 2003).

The psychological effects of binge eating may result in individuals feeling out of control, depressed and isolated (Stuppy, 2003). An individual that binge eats is usually extremely distressed by their eating behaviour and experience feelings of disgust, shame and guilt both during and after a binge. Therefore the complications as a result of binge eating are severe. The serious physical ramifications coupled with the psychological problems can impact daily functioning and limit the quality of life.

1.4 Conclusion

The discussion so far has focused attention on eating disorders anorexia nervosa and bulimia nervosa and demonstrated its relationship to EDNOS. It seems likely that EDNOS captures the atypical presentations and partial syndromes of anorexia nervosa

and bulimia nervosa (Hamilton, 2007). Furthermore, an investigation into binge eating disorder, a category under EDNOS was also presented to convey the classification of various disorders related to eating pathology. It is apparent that the characteristics, beliefs and behaviours associated with eating pathology are extensive and requires a more complex and integrated analysis of the various tenets that are implicated in the development of the distorted eating attitudes. Considering that the majority of eating disordered cases fall within the NOS category, the focus particularly on binge eating disorder was crucial in establishing an overview of maladaptive attitudes and beliefs around food and weight that are experienced by the majority of individuals with eating pathology. It is significant that throughout the discussion, the heterogeneous nature of eating disorder symtomatology may facilitate in raising certain questions on the feasibility of diagnostic boundaries in assessing cases of eating pathology. However, the apparent severity as viewed in the physical and psychological complications of the eating pathologies clearly indicates the need for a comprehensive model in understanding the development of eating related pathologies.

Hence, the model used for the aetiology of eating pathology in this research is the biopsychosocial model as it provides the most comprehensive explanation and analysis of the development and aetiology of this disorder (Bulik, 2005; Gerlinghoff. et al., 2003; Porzelius & Bolton, 1999; Stice et al., 2002). Therefore, the following chapter (chapter two) will focus exclusively on the aetiology of eating disorder by structuring the discussion around the three main dimensions (biological, psychological and sociocultural tenets) of the biopsychosocial model.

. Chapter 2: Aetiology of eating pathology

2.1 Introduction

As already mentioned, eating pathology is a complex construct where the characteristics of the disorder rely on a multidimensional model for understanding. Likewise, when addressing the aetiological cause of eating disorders, research has largely abandoned a single cause for the disorder (Bulik, 2005; Gerlinghoff. et al., 2003; Grilo, 1998; Yates, 1989). Hence, a biopsychosocial model was considered the most appropriate as an explanatory model for the aetiology of eating disorders.

Therefore, this chapter will be divided into three broad sections Within the biological model section the various biological theories associated with eating disorders will be presented, included in this is the influence age may have on the propensity to develop eating pathology. Under the socio-cultural section, the various factors involved will be discussed as well as a description of the socio-cultural units addressed in this research, i.e. gender, race and socio-economic class. The psychological model of eating pathologies will be explained in more detail as this forms part of the primary research objectives of the study. Similarly, body image disturbances and personality traits will be investigated as these variables were the psychological units that were chosen to be considered in this research

2.2 The Biological factors

In daily life, the sensation of hunger is perceived as the monitor of appetite and the driving force to acquire food (Halmi, 1996). Considering the abnormal eating behaviours as reflected in eating disorders, it is likely that the natural biological drive for food has become severely distorted. Therefore, it cannot be ignored that eating disorders are serious diseases with a biological basis that are influenced by psychological and social tenets (Halmi, 1996; Yates, 1989). The following discussion will focus exclusively on the biological tenets of the biopsychosocial model as possible risk factors in the development of eating disorders, anorexia nervosa, bulimia nervosa and EDNOS.

2.2.1 Role of genetics

It is well recognised that a tendency towards eating disorders (anorexia nervosa, bulimia nervosa and EDNOS) may be in part inherited (Hales & Yudofsky, 2004). There is support for the suggestion that eating disorders run in families (Hudson et al., 2006; Hales & Yudofsky, 2004; Reihborn-Kjennerud, Bulik, Tambs & Harris, 2004). Symptoms of eating dysfunction appear to be moderately heritable. For example, twin studies of binge eating, self induced vomiting and dietary restrain suggest that between 46% and 72% of the behaviours is due to genetic effects (Klump, Mcgue & Iacono, 2000). Similarities, pathological attitudes such as body dissatisfaction, eating and weight concern show heritability of approximately 32% -72% (Klump et al., 2000). These

findings suggest a genetic component to the attitudes and behaviours that contribute to the development of eating pathology (Kaye et al., 2004). It is suggested that eating disorders (anorexia nervosa, bulimia nervosa and EDNOS) may share a 50% possibility of genetic predisposition (Cole, 2007) with the remaining influence coming from the environment. Family studies show that diagnosis of anorexia nervosa, bulimia nervosa and EDNOS appear in the first degree relatives of subjects with anorexia nervosa and bulimia nervosa (Halmi & Kaye, 2007; Kaye et al., 2004). Such a tendency combined with the psychological and social factors, which will be discussed in the following sections (2.3 and 2.4 respectively), might contribute to the development and severity of eating disorder (Cooper, 1995).

2.2.2 Brain chemistry

Research into eating disorders, such as anorexia nervosa, bulimia nervosa, and binge eating disorder suggest that the symptoms associated with the disorders involve a dysregulation of behaviour (e.g., restrictive eating, impulsive eating patterns) that is suggestive of prefrontal dysfunction (Spinella & Lyke, 2004). Functional neuro-imaging studies show that prefrontal-subcortical systems play a role in eating behaviour and appetite in healthy individuals, and that people with eating disorders have altered activity in these areas. Eating behaviour is often disturbed by illnesses and injuries that impinge upon prefrontal-subcortical systems. Evidence demonstrates that increased dysexecutive traits (inability to plan, organise and problem solve) were associated with disinhibited

eating and greater food cravings. These findings support the role of prefrontal systems in eating related disorders (Spinella & Lyke, 2004; McDonough & Martinelli, 2004).

The role of the hypothalamus in the brain is important as it is the means of regulating eating and hunger. The chemical and natural appetite suppressant called glucagon-like peptide-1 (GLP-I) is suspected to activate the different centres of the hypothalamus in responding to food (Halmi, 1996; Halford, 2001). Therefore, it has been suggested that irregularities in the hypothalamus region may be implicated in the development of eating related disorders (Fichter, Pirke, Pollinger, Wolfram & Brunner, 1990; Halmi, 1996).

2.2.3 Neurotransmitter activity

There has been a lot of attention given to the role of serotonin, which is related to the control of eating, mood, and impulsivity (Appolinario & McElroy, 2004; Grilo, Sinha & O'Malley, 2002; Hales & Yudofsky, 2004; Pull, 2004). Abnormal levels of serotonin have been implicated in the cause of eating disorders and the apparent vulnerability to binge eating. These systems influence behavioural and personality characteristics (anxiety, food intake) that are disrupted in eating disorders (Klump & Culbert, 2007). Some research, for example, has suggested eating disorders may be related to atypical endogenous opioid peptide (EOP) activity. EOP's have been found to influence both alcohol and food consumption (Mercer & Holder 1997) and may play roles in the control of eating behaviour (Grilo et al., 2002).

The involvement of dopamine in pathological eating and obesity is poorly understood (Wang et al., 2001). Despite the involvement of brain dopamine receptors in obesity having not been directly assessed, evidence suggests that lower dopamine receptor availability is found in obese individuals and is linked to addictive behaviours.

Similarly, the role of the Melancortin 4 Receptor gene (MC4R) is implicated as being responsible for the onset of binge eating (Cody, Reveles, Hale, Lehman, Coon & Leach, 1999). This gene is initially responsible for making a protein that helps stimulate a person's appetite in the hypothalamus - which regulates hunger. Researchers have found that when the gene is not functioning adequately, it does not produce enough protein which can cause the person to feel extra hungry. (Hebebrand et al., 2004).

The research on biological factors and eating pathology is relatively recent and more studies are being done to fully understand the biological basis of these conditions. However, the consensus is that there is a biological basis underlying the onset of eating pathology (Cole, 2007). Turning attentions to the biological aspect of age suggest that there appears to be a relationship between age of an individual and the propensity to develop eating disorder. It is commonly perceived that eating disorders affect the adolescent and young adult groups within society. This is perhaps attributed to sociocultural influences or physiological vulnerabilities. Further research is needed to determine whether the influence is due to physiological or sociocultural factors. Until then, the present research will consider the influence of age on the propensity to develop binge eating disorder from a biological perspective.

2.2.4 The role of age

While many researches suggest that the teenage years are particularly vulnerable times for the development of eating disorder (Fairburn, 1995; DSM IV-TR, 2000; Goldfein et al., 2000; Kaplan et al., 1994; Stuppy, 2003), evidence suggests that there is a tendency for younger children (age 6-12) to develop eating disorder (Cole, 2007; Hamilton, 2007; Marcus, et al., 2003). The majority of patients with anorexia nervosa develop them around puberty. For instance, it has been suggested that youngsters report body shape disturbances and compensatory weight control behaviours that are synonymous with symptoms of eating pathology (Ackard, Fulkerson & Neumark-Sztainer, 2007). Those who develop bulimia nervosa usually do so later around ages 13-17 (Cole, 2007). It is significant that early onset of anorexia nervosa is characterised by a more disturbed personality and dissatisfaction of body (Abbate-Daga et al, 2007).

Turning attention to the onset of binge eating disorder, a study done by Binford, Mussell, Peterson, Crow and Mitchell (2004) presented evidence that binge eating disorder can develop early (younger than 13 years) and later on in life (older than 13 years) depending on the interaction of certain variables such as coping and anxiety. Research by Marcus, Moulton and Greeno (1995) found that those individuals with early onset of binge eating (12.8 years old) had an early onset of obesity (12 years old) and dieting (14 years old). These results were reiterated by research where groups that initially began to binge and later resorted to dieting methods had an earlier age of onset of binge eating disorder (Manwaring et al., 2005).

Therefore, while the teenage years may be a particularly vulnerable time for the development of eating disorders, there is a growing trend observed where pre-adolescent youth are developing clinical cases of eating pathology (Cole, 2007).

Within the biological dimensions of the biopsychosocial model, research focused on the role of genetic factors, brain chemistry and neurotransmitter activity in contributing to the spectrum of disordered eating. The genetic predisposition to eating disorders suggests that there is a diverse interplay of various biological factors that contribute to the development of the specific eating disorder symtomatology. Furthermore, despite the increasing evidence that younger children are developing disordered eating behaviours and attitudes (Engstrom & Norring, 2001), research suggests that the teenage years are particularly vulnerable times for the development of eating related disorders (DSM IV-TR, 2000; Fairburn, 1995). Therefore, the researcher focused on university student in order to determine whether this age range is one of the factors that could predispose students to develop eating pathology. It was proposed that the age category was within the late teenage years or early twenties, considering that first year courses are taken predominately by school leaves.

Having already expanded upon the biological factors, the next section will focus directly on the role of sociocultural tenets of the biopsychosocial. According to research (Garner & Garfinkel, 1980; Stoylen & Laberg, 1990) the role of sociocultural factors have a powerful influence on the development of eating disorders Therefore the following

section will examine the particular influence of gender, race and socioeconomic status in the development of eating pathology.

2.3 Sociocultural factors

The sociocultural influences suspected of contributing to the development of eating disorders include the societal perceptions of beauty, influence of social and cultural standards on physical appearance, the value of a thin toned physique and the attention from the media on ideal body shape (Duran, Cashion, Gerber & Mendez-Ybanez, 2000; Garner & Garfinkel, 1980; Stoylen & Laberg, 1990; Striegel-Moore, McAvay & Rodin, 1986; Thomas & Frank, 2003; Thomson & Sherman, 1993).

The evidence for the sociocultural approach is based on the following facts; a) females are more susceptible to developing eating related disorders (Attie & Brooks-Gunn, 1989; Szabo & le Grange, 2001), b) developmental, familial, social and cultural aspects serve as predisposing factors (Thomas & Frank, 2003), c) life stressors serve as precipitating factors (Striegel-Moore et al., 2005). In light of this, the central sociocultural units implicated in this research as contributing to the onset of eating pathology (gender, race and socioeconomic class) will be dealt with in the following discussion.

2.3.1 Gender

Currently there has been a lot of research on the prevalence of eating dysfunction, among males and females (Attie & Brooks-Gunn, 1989; Freeman & Szabo, 2005). Most of the research points to the fact that females are more susceptible to eating disorder than their male counterparts (Favazza, 1996; Goldfein et al., 2000; Leon et al., 1995; Senekel et al., 2001; Szabo & le Grange, 2001; Thompson & Sherman, 1993).

Gilligan (1990) stresses that gender difference is apparent in western society where males are socialised to derive their sense of self worth from achievements and females judge themselves according to externalised self perception (peer evaluation). Furthermore, females hide their thoughts and feelings in order to avoid confrontation, they put the needs of others ahead of their own and they suppress their anger and present themselves as caring and nurturing (Katherine, 1991). In addition, boys who later develop eating disorders do not conform to the cultural expectations for masculinity; they tend to be more dependent and passive (Kearney-Cooke & Steichen-Asch, 1990). Adherence to these social patterns has been linked to disturbed eating practices (Gilligan, 1990).

Furthermore the current standard of beauty that emphasises an extreme lean body is more conditioned towards females than males. It is no wonder that females experience a great deal of pressure to conform to this standard and these expectation influences all aspects of their lives (LaPorte, 1997). Garner and Garfinkel (1980) proposes that eating disorders frequently occur in individuals whose social environment places special emphasis on

slimness and weight control (ballet dances, models and athletes). Similarly, males seem to develop eating dysfunctions as a result of strict requirements set out by a particular sport or type of job. The highest rate of eating disorders among males has been found in body builders, distant runners, swimmer and jockeys (Striegel-Moore, Silberstein & Rodin, 1986). Males may also go on binges to increase strength before the next restriction period (Thompson & Sherman, 1993; Kearney-Cooke & Steichen-Asch, 1990).

While the incidences of eating disturbances are predominate in females (LaPorte, 1997), the relative increase in the number of males diagnosed with binge eating disorder is higher in comparison to the rate of males diagnosed with anorexia nervosa and bulimia nervosa (Freeman, 2004; Fairburn & Beglin, 1990; Hawkins & Clement, 1980; Lachenmeyer & Muni-Brander, 1988; Stuppy, 2003; Wolf, 1991). According to Linde, Jeffery, Levy and Sherwood (2004) the difference between males and females diagnosed with binge eating disorder is minimal with a 21% and 27% diagnosis respectively. Nonetheless, males account for approximately 5 – 10% of all eating disordered cases (LaPorte, 1997; Robb & Dadson, 2002). It could be that males go undiagnosed because they are not suspected of having a 'female problem' and they are less likely to admit having an eating disorder (Robb & Dadson, 2002). However, in general, men appear to be more comfortable with their weight and perceive less pressure to be thin (Freeman, 2004).

Thus, it does appear that gender plays a contributing role in the development of eating related disorders. In order to investigate whether this trend is consistent in the present

study, this research will evaluate both males and females and investigate whether the construct of gender has an influence on predisposing an individual to develop binge eating disorder.

2.3.3 The role of race

Eating disorders have been conceptualised as an illness deriving from Western industrialised countries where Caucasian individuals experience the social pressure to be thin and aspire to certain body ideals (Talleyrand, 2006; Szabo & le Grange, 2001). However, research is observing a trend with regard to eating pathologies where the incidences are occurring across racial lines (Becker et al., 2003; Cachelin, Veisel & Barzegarnazari, 2000; Costin, 1999; Davies, 1995; Jennings, Forbes & Hulse, 2006; Lachenmeyer & Muni-Brander, 1988; Reagen & Hersch, 2005; Szabo & le Grange, 2001; Wilfley, Schreiber, Pike, Striegel-Moore, Wright & Rodin, 1995).

The belief that race is a major risk factor in the development of eating related disorders derives from different sources (Striegel-Moore et al., 2003). During the last two decades, high rates of obesity-related symptoms (binge eating) and obesity have been documented among African American women (Talleyrand, 2006). In South Africa, clinical cases of eating disturbances have been detected in multi-racial (Caucasian, Black, Indian and Coloured) adolescence (Szabo & Hollands, 1997).

Racial differences have been reported for a number of variables (body dissatisfaction, frequency of binges, dieting, BMI and fear of fatness) that have been hypothesised to

contribute to the development of eating related pathology (Striegel-Moore, Wilfley, Pike, Dohm & Fairburn, 2001).

Therefore, it does appear that ethnicity plays a moderating role in the development of eating disorders. In order to determine whether this trend is consistent with eating pathology, the researcher chose to focus on the potential effects that race has in predisposing adolescence to develop eating pathology.

2.3.4 The role of socio-economic status

In the past, research into eating related disorders have considered socio-economic status as a potential risk factor in the development of eating disorders, where individuals from a higher socio-economic status were perceived as being more likely to engage in behaviours associated with eating disorders such as dieting (Crisp, Palmer & Kalucy, 1976; Rogers, Resnick, Mitchell & Blum, 1997). It was believed that as individuals in western societies become more affluent and wealthier, the risk of developing eating related disorders were said to increase, irrespective of race or cultural background (Crisp et al., 1976)

Recently, the findings by Soh, Touyz and Surgenor (2006) suggested that perceptions associated with disordered eating (slimness, dieting) have permeated through all socio - economic structures of society and has created a situation where eating related disorders are no longer differentiated according to socio-economic status. Many studies have found

similar results where eating disorders are being observed in individuals across socio - economic groups (Pate, Pumariega, Hester & Garner, 1994; Szabo & Grange, 2001; Soh et al., 2006, Striegel-Moore et al., 2001). For example, individuals from lower socio economic groups have reported higher rates of disordered eating behaviours such as vomiting, use of diet pills, laxatives and diuretics as a means to lose weight (Gibbons, 2001). This trend is attributed to the influence of the media (Polivy & Herman, 2002) and the process of globalization which has resulted in the distortion of boundaries between the socio-economic classes (Soh et al., 2006).

Under the sociocultural dimension, the influence of gender, race and socioeconomic class were considered as possible predictors in the onset of eating pathology. From the discussion, it appears that eating pathologies attack females more often than males, though cases of males diagnosed with eating disturbances are observed. However, cases of eating pathology are continuing being recognised across racial and socioeconomic lines. This trend may suggest that eating pathologies are becoming increasingly popular, where all groups and classes of people are vulnerable to developing its maladaptive behaviours, attitudes and beliefs. Having provided an overview of the sociocultural tenets of eating pathology, the following section will draw on the psychological dimensions that may influence the onset of eating pathology.

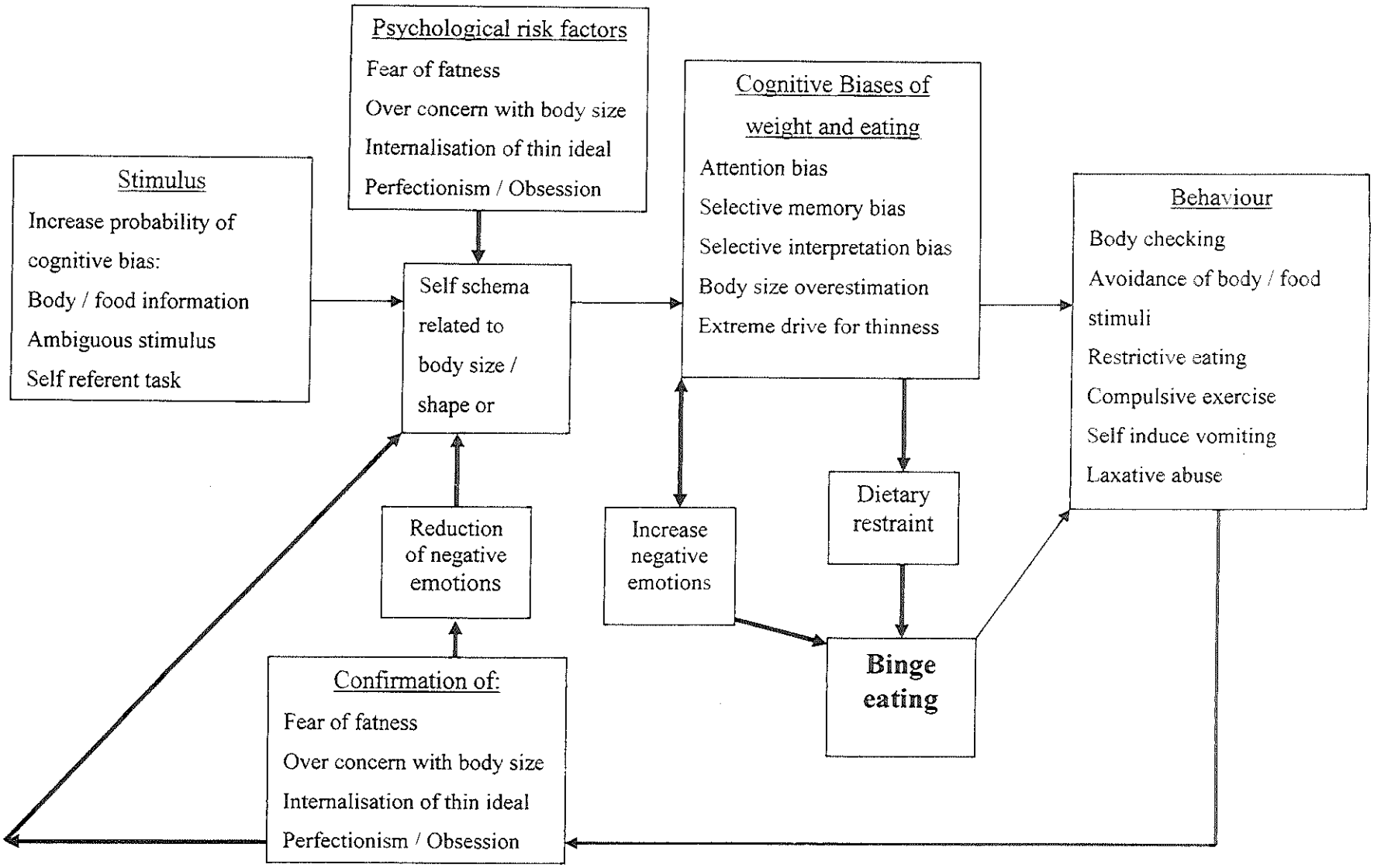


Figure 1: Integrated model of eating disorders as proposed by Williamson et al. (2004, p, 713).

2.4 The Psychological factors

From a psychological perspective, there are many possible theories to explain the symptoms and development of eating pathology (DSM IV-TR, 2000). One of the leading theories that provide a holistic approach to understanding the aetiology of pathology is the psychodynamic paradigm (Hornyak & Baker, 1989; Hook, 2001). This model is the foremost authority on human mental processes (fantasy, anxieties and defence mechanisms). Furthermore, the adaptability of the model is evident where certain elements of the psychodynamic theory have been successfully integrated into other models (e.g. cognitive behaviour model, feminist model) in order to produce an effective understanding and conceptualisation of pathology (Heatherton & Baumeister, 1991; Orbach, 1987; Williamson, White, York - Crowe & Stewart, 2004).

However, the widely used and accepted model for understanding eating disorders is the cognitive behavioural model (Williamson et al., 2004). Some of the reasons for its popularity are related to the ability to use this model to treat both males and females with eating disorders. Furthermore, the model caters for the construct of body perception which has been implicated as a possible risk in the onset of eating disorders (Williamson et al., 2004).

Therefore, the following section will initially consider the psychodynamic model of maladaptive eating by focusing on aspects related to infantile sexuality, object relations and mother/ child relationships. Thereafter, the cognitive behavioural model of eating

pathology will be presented in order to present a comprehensive overview of the distorted beliefs and cognitions that work to perpetuate the progression of disordered eating.

2.4.1 The psychodynamic model

The psychodynamic perspective emphasises that internal conflicts and unconscious forces are involved in the manifestations of distorted eating patterns (Costin, 1999; Hornyak & Baker, 1989). The Freudian model of eating pathology introduces the concept of infantile sexuality (Hornyak & Baker, 1989). This theory suggests that each child undergoes a stage where they become involved in a phantasy where the opposite sex parent becomes the object of desire. This is referred to as the Oedipus complex (Freud, 1949). At this important developmental stage, the manner in which parents react to the child can affect the overall development of the child (Freud, 1949). For instance, by rejecting or exploiting the child's affection (sexual abuse), the child can be left with intense feelings of guilt and anxiety. According to this model a child will later develop eating pathologies as a means of escaping these negative emotions (anxiety) (Heatherton & Baumeister, 1991; Hornyak & Baker, 1989; Schwarze et al., 2003). The behaviours are perceived as defence mechanisms (dissociation, denial) which actively assist in reducing the anxiety caused by early childhood trauma (Meyer & Waller, 1998).

Psychoanalytic theory perceives that anger derives from the aggressive impulse which is important and essential for psychological development and functioning (Freud, 1949). As

already mentioned, defence mechanism shield negative emotions such as anger and individuals may receive a momentary relief of these negative feelings (Deaver, Miltenberger, Smyth, Meidinger & Crosby, 2003; Epstein, 1987; Heatherton & Baumeister, 1991; Orbach, 1984; Powell & Thelen, 1996). For individuals with binge eating, the overweight body as may serve as the outward expression of that anger and hostility (Dana & Lawrence, 1987; Epstein, 1987; Orbach, 1984). In essence, individuals who binge eats demonstrate very little connection between the physical needs, bodily demands and food intake (Favazza, 1996). Most of the time a person will eat not out of hunger, but according to emotional needs (Grant & Boersma, 2005; Favazza, 1996). The individual who eats compulsively has lost touch with the hunger and the basic biological controls of eating (Orbach, 1987).

In psychodynamic literature on eating related disorders, the role of the body takes on a metaphorical meaning in relation to the expression of uncomfortable emotions (Dana, 1987; Epstein, 1987; Farrell, 1981; Orbach, 1984). For individuals with eating pathology, body image will fluctuate depending on how a person feels or how much they eat. After eating, a person will perceive their bodies as much bigger. Subsequently, feelings of anxiety and depression will be expressed as feelings of fatness (Dana, 1987; Grant & Boersma, 2005). Furthermore, the search for autonomy may be maladaptively pursued through the control of ones body shape and size (Bruch, 1973; Dana, 1987).

The focus on the mother / child relationship is crucial in understanding the development of eating disturbances (Dana, 1987; Schwartz, 1998; Steiger & Houle, 1991; Winnicott,

1963). A mother who is critical of the child will direct emotions of hostility and abuse at the child. These moments of hostility are counterbalanced by periods when the mother is nurturing and caring (Stein, Wooley, Cooper & Fairburn, 1994). The conflicting messages confuse the child and add to the anxiety as well as low self esteem that he/ she is experiencing. The onset of eating pathology from the condition may serve as an expression of resentment towards the mother or an attempt to separate from the mother (Dana, 1987; Winnicott, 1963). Therefore, eating pathology can be associated with the ability to deal with negative emotions as well as the striving to gain autonomy and independence for the self (Dana, & Lawrence, 1987; Favazza, 1996).

Closely tied in with this model is the disturbance in object relations as perceived in eating related disorders (Becker, Bell & Billington, 1987; Schwartz, 1998) where problems in the early developmental stage prevents a child from forming a healthy separation or developing a sense of individuation (Schwartz, 1998). Furthermore, these individuals are unable to derive comfort or satisfaction from the interaction with others. According to this theory, neglectful and inappropriate parenting prevents healthy interaction with external objects (Steiger & Houle, 1991). Children do not have the ability to internalise mental functions that are necessary for developing a sense of self, forming relationships, regulation of tension and the creation of healthy self esteem (Steiger & Houle, 1991).
In order to compensate for their inability to develop a sense of self or form relationships, the child will gain a sense of narcissistic bodily fixation, where control over the body and eating assist in regulating affect and creating a sense of personal competence. This theory was supported by Becker et al. (1987) where individuals with eating related disorders

scored high on insecure attachment and egocentricity which indicates traits such as suspiciousness and manipulative attitudes toward others. This means that individuals with eating pathology display greater interpersonal insecurity and greater self-absorption that normal eaters. The hostile and neglectful attitudes directed by disordered eating individuals towards themselves are similar to the attitudes directly by their parents towards them as children (Steiger & Houle, 1991). Therefore, disruptions associated with object relations seem to play a role in the onset of eating related pathology (Steiger & Houle, 1991).

The next psychological construct that will be considered is the cognitive behavioural model of eating pathology. In cognitive behavioural theory, core belief systems are perceived as highly important in the development and maintenance of eating dysfunction. In selecting the cognitive behavioural model of eating pathology, it was apparent that the main cognitive disturbances of eating were manifested in a characteristic set of attitudes and values concerning the body, weight and shape (Jones, Leung & Harris, 2007). Thus, considering that the research is interested in determining the cognitive disturbances (core beliefs, attitudes and behaviours of weight, shape food and eating) associated with eating pathology, the CBM was selected as being relevant to the objectives of the research (Jones et al., 2007).

2.4.2 The cognitive behavioural model (CBM).

This construction of the cognitive behavioural model is based on cognitive processes (verbal or pictorial ideas in the conscious mind, emotions) which develop as a result of particular assumptions (schemas developed from past experiences) (Costin, 1999; Fox, 2006; Kaplan et al., 1994). The primary focus on cognitive processes and maladaptive behaviours have resulted in the extension of the model to include the understanding and aetiology of other psychopathologies, including eating disorders (Costin, 1999; Dobson & Dozois, 2001). The fundamental principles of this model work at being problem focused, goal directed, future orientated and empirically based (Costin, 1999).

A cognitive behavioural model of eating disorder involves focusing on disturbed eating behaviours (binge eating and the preoccupation with food) and body weight problems (Agras, 1987; Appolinario & McElroy, 2004; Fox, 2006; Romano & Quinn, 1995). Over the years, many conceptual cognitive behavioural models have been developed to explain eating disorders (Williamson et al., 2004). The earlier theories focused on fear of fatness, and disturbed body image as motivational factors in the development of anorexia nervosa and bulimia nervosa (Bruch, 1974). However, the onset of binge eating created the incentive for the development of the dietary restraint theory (Polivy & Herman, 1985) and the escape from negative affect theory (Heatherton & Baumeister, 1991). While these theories have been effective in contributing to the understanding of eating related disorders such as binge eating disorder, the development of the integrated CBM for eating disorders is the latest innovation that collectively assimilates the perspectives of

CBM theorists over the last thirty years into one integrated and cohesive model for the understanding of eating disorders, including EDNOS (Williamson et al., 2004). However, this model should not be viewed as a novel theory; rather it provides a fundamental understanding of the strategies that have been developed in the assessment and treatment of all eating disorders over the years (Anderson, Lundgren, Shapiro & Paulosky, 2004; Garner, Fairburn & Davis, 1987; Stewart & Williamson, 2004).

The influence of the dietary restraint model as well as the affect regulation model has played a contributing role in the inception of the Integrated CBM of eating disorders (Heatherton & Baumeister, 1991; Williamson et al., 2004). The dietary restraint model suggests a number of sequential events are related to the development of binge eating. The first aspect includes dysfunctional attitudes and cognition about body weight and shape. This is followed by a fear of gaining weight. Restraint eating in the form of extreme dieting is the next event and this stage eventually results in binge eating (Antoniazzi, Zivian & Hynie, 2005). The affect regulation model suggests that individuals engage in binge eating when experiencing negative affect because binge eating serves to temporarily decrease the levels of negative emotions (Deaver et al., 2003).

Specific aspects of these models (affective disturbance, body disturbance, dieting) have been successfully incorporated into the Integrated CBM to understand the aetiology of anorexia nervosa, bulimia nervosa and binge eating (Williamson et al., 2004). For the purpose of this study, the factors contributing to the onset of general eating pathology as

proposed by this model will be discussed in order to investigate the associations between unhealthy cognitions and eating psychopathology (Jones et al., 2007). A diagrammatical representation of the model according to (Williamson et al., 2004) is presented on page 54. The central features of this model are the body self schema, stimulus, psychological risk factors for eating disorders, cognitive biases, binge eating, compensatory behaviours and negative reinforcement of compensatory behaviours by reducing negative emotions (Williamson et al., 2004; Williamson, Muller, Reas & Thaw, 1999).

According to cognitive behavioural theory, the structures of thought and thinking are organised according to schemata. A schema is highly efficient knowledge structures that exist for all information requiring cognitive processing and information in memory (Williamson et al., 1999). People with eating disorders possess a dysfunctional schema that is focused primarily on an over concern with body size and eating. These schemas are given overvalued and central focus among other cognitive structures and it is applied to the self (Williamson et al., 1999). This body schema is primarily involved in directing individuals to stimuli that involves the body and food. It plays a fundamental role in influencing the reactions, thoughts and perceptions of individuals with eating related disorders (Williamson, Netemeyer, Jackman, Anderson, Funsch & Rabalais, 1995; Williamson et al., 1999; Williamson et al., 2004).

The advent of bias thought and behaviour is proposed to create dysfunctional and self destructive knowledge structures (Williamson et al., 1999). These cognitive biases are activated by certain types of stimuli in people with highly developed self schema about

the body and food. Furthermore, the cognitive biases occur without conscious awareness and the cognition is experienced as real by the disordered eater (Williamson et al., 2004

In individuals with eating disorders such as binge eating, certain types of stimuli influence the development of cognitive biases. The primarily factors are body / food information, ambiguous stimulus and self referent task (situations that require individuals to reflect on themselves especially their body, eating, etc.) (Williamson et al, 2004). The model assumes that the development of a body self schema is attributed to certain psychological characteristics or risk factors such as fear of fatness, over concern with body size and shape, internalisation of a thin ideal and perfectionism / obsessional thinking (Williamson et al., 2004).

Consistent with eating pathology behaviours is the influence of binge eating. The following discussion will sequence the events according to the CBM of the process involved in the onset of binge eating behaviours that are observed in eating pathology. The model states that negative emotions interact with the body self schema to activate cognitive biases. However, the activation of cognitive biases elicits negative emotions. This development may lead to feelings of overwhelming anxiety or obsession. Individuals strive to escape or avoid these severe feelings of anxiety. In addition, the obsession experienced with the body and eating serve to exacerbate the emotional state (Williamson et al., 2004). In order to escape these uncontrollable feelings and emotions, the individual will engage in binge eating (Freeman & Gil, 2004). Furthermore, dietary restraint (restrict energy intake) is seen as been derived from cognitive biases such as

extreme drive for thinness. With regards to binge eating, the model states that negative emotions interact with the body self schema to activate cognitive biases. However, the activation of cognitive biases elicits negative emotions. This development may lead to feelings of overwhelming anxiety or obsession. Individuals strive to escape or avoid these severe feelings of anxiety. In addition, the obsession experienced with the body and eating serve to exacerbate the emotional state (Williamson et al., 2004).

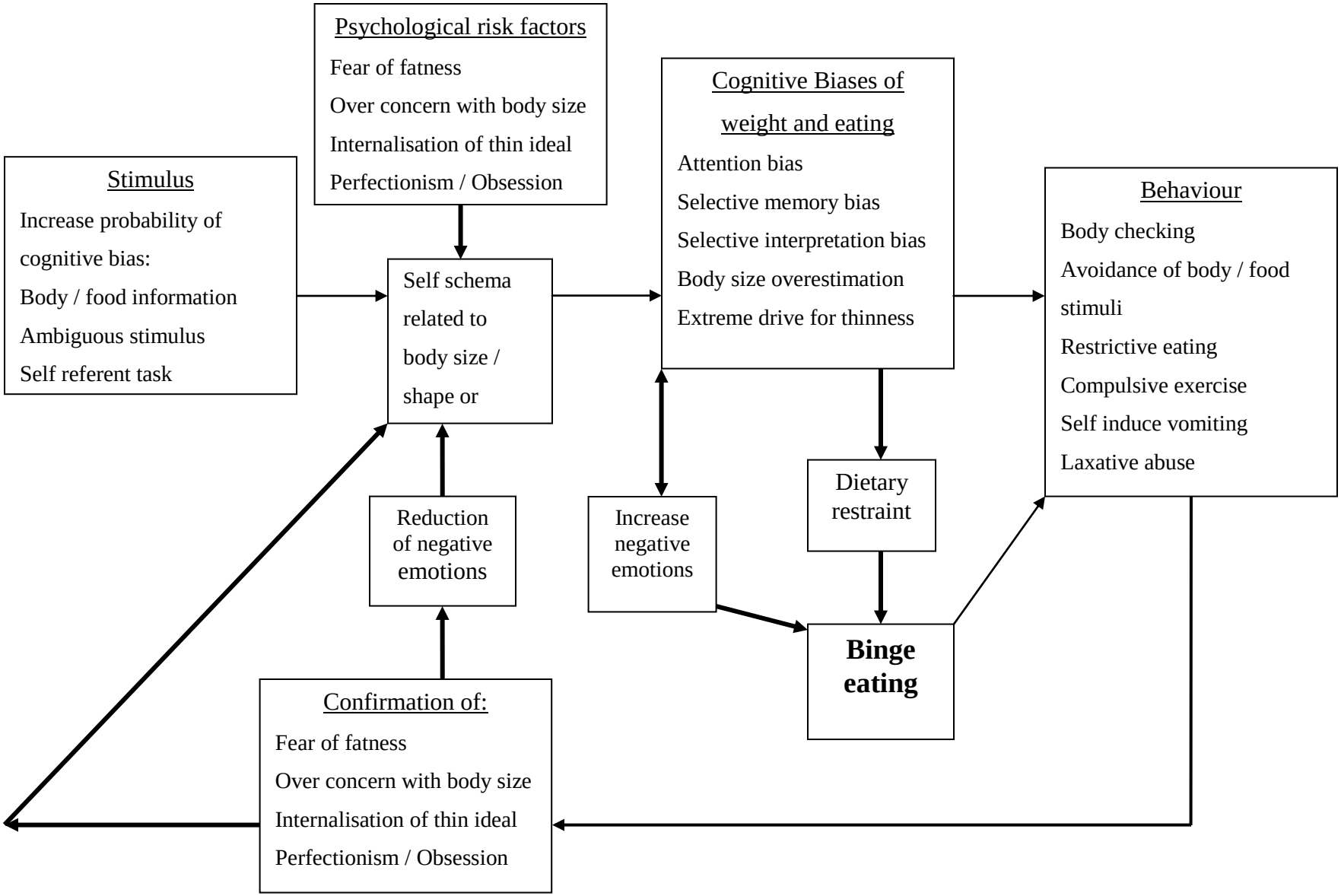
Therefore, binge eating is determined by the dual pathways of dietary restraint and the regulation of negative emotional affect (Williamson et al., 2004). Because binge eating reduces negative affect, the behaviour is likely to continue (Anderson et al., 2004; Deaver et al., 2003; Lee & Miltenberger. 1997; Williamson et al., 2004). Similarly, a person with binge eating may engage in other behaviours that allow them to escape the anxiety. These behaviours (body checking, restrictive eating, avoidance of body or food, etc.) may play a role in reducing negative emotions, which inadvertently helps to negatively reinforces the behaviour (Reas, Grilo, Mashed & Wilson, 2005). These behaviours serve to confirm that one should be obsessional / perfectionist, have fear fatness, worry about body size and internalise the thin ideal (Williamson et al., 2004).

Binge eating has been associated with restrictive eating and the hedonic appraisal of food (Williamson et al., 1999; Williamson et al., 2004). Therefore, it is not surprising that many studies have reported that the pleasure associated with binge eating follows a period of calorie restriction (Braet & Decaluwe, 2005; Engelberg, Gauvin & Steiger, 2005; Hill, 2004). Restrictive eating observed in anorexia nervosa and bulimia nervosa

occurs when the cognitive biases (extreme drive for thinness, body overestimation) develops into dysfunctional behaviours (compulsive exercising and restrictive eating). These maladaptive behaviours will eventually serve to confirm that one should be fearful of being fat and internalise the thin ideal (Williamson et al., 2004).

While the model offers a comprehensive paradigm of dysfunctional eating attitudes and behaviours that are related to eating pathology, there are many other factors that play a role in determining if a person will develop binge eating disorder. The role of genetics, family, personality and specific social learning factors are best demonstrated when explained in conjunction, as is done in the biopsychosocial model, which is the purpose of this chapter As already mentioned, the cognitive behavioural model of eating pathology also caters for an important unit that was a focus of in this research; body perceptions. Therefore, it is necessary to investigate whether body perceptions has an influence in predisposing students to develop eating pathology.

Figure 1: Integrated model of eating disorders as proposed by Williamson et al. (2004, p, 713).



2.4.3 Body perceptions and eating pathology

A body image or body perception is a concept that has come to represent the "internal" image or representation that a person has of his / her physical appearance (Bruch, 1974; Thompson, Heinberg, Altabe & Tantleff-Dunn, 1999). It is based on how one feels about one's body and not on actual physical appearance. Body perceptions share an important role in influencing the development of disturbances such as eating disorders. Across many studies individuals with eating pathology reported significantly increased disturbance in body shape and perceptions of size and thinness (Adami, 2001; Baird, Mcintyre & Theim, 2007; Benn-Tovim, Walker & Chin, 1990; Bruch, 1974; Cargill, Clark, Pera, Niaura & Abrams, 1999**;** Cummins & Lehman, 2007 **;** Dana, 1987; de Zwaan et al., 1994; Geller, Srikameswaran, Cockell & Zaitsoff, 2000; Hilbert & Tuschen-Caffier, 2005; Hrabosky, Masheb,; Pelletier & Dion, 2007; Jungwee & Beaudet, 2007; Haines, 2007; Mussell et al., 1996; Rosen, 1996 ; Spitzer et al., 1993; White & Grilo, 2007).

Theories that explain the development of negative body perceptions have relied on the biopsychosocial understanding of negative body perceptions (Heinberg, 1996; White, 1992).For instance, Heinberg (1996) proposed a theory of body image disturbance according to three groups of theories: perceptual, developmental, and sociocultural. According to the perceptual theories as proposed by Heinberg (1996) cortical deficits suggest that body size overestimation relies on deficiencies in visuospatial ability (Heinberg, 1996). Furthermore the adaptive failure theory suggests that the overestimation of body size may not change at the same rate as the actual changes seen in the body. In

addition, the perceptual artefact theory proposes that the tendency to overestimate ones body size is related to the person's actual body size (Heinberg, 1996).

The developmental theories as proposed by Heinberg (1996) and White (1992) focus on childhood and adolescent developmental issues such as puberty, teasing, and early sexual abuse Brooks-Gunn and Reiter (1990) provide a review of the role of the pubertal process in development and the association with eating disorders. Specific focus is given to how hormonal changes influence growth and how levels of hormonal secretions are suppressed when women experience a considerable loss of weight. In addition, studies show that post menarchal girls have a tendency to over estimate their body size. Those girls that mature later than their peers have a more positive body image than those who mature earlier (Brooks-Gunn & Reiter, 1990; Heinberg, 1996).

Furthermore, individuals who have been sexually abused report that the overeating as a result of the binge facilitates in numbing their feelings and distracts them from bodily sensation (Costin, 1999). The weight gain serves as a protective covering that keeps the binge eater unattractive to potential partners or perpetrators (Costin, 1999).

Another important influence on negative body perceptions are the sociocultural theories as proposed by White (1992). According to these theories, those with eating disorders experience a sociocultural pressure to be thin (Garner & Garfinkel, 1980; Thomas & Frank, 2003; Striegel-Moore, McAvay & Rodin, 1986). Dunkley, Wertheim and Paxton (2001) and Smolak and Levine (1996) suggested that individuals with higher body dissatisfaction

and dietary restraint live in a culture supporting the thin ideal. As the social pressure for thinness and the stigma of obesity increases in western societies, the discrepancy between desirable body weight and actual weight increases as well (Friedman, Reichmann, Costanzo & Musanto, 2002; Hsu et al., 2002).

In society, the ideals of thinness promote qualities such as being beautiful, articulate, well groomed, socially active and well dressed (Costin, 1999). It is no wonder that eating pathology iindividuals experience a greater concern with their weight, dieting and fears of becoming fat (Gromel et al., 2000). Chernin (1981) believes that western society is governed by a phobia around being overweight and fat. Many individuals are becoming loathsome of their bodies and developing a sort of disembodied state where the body is perceived as alien and unidentifiable as a result of not meeting up to the thin ideal (Jasper, 1993; Morry & Staska, 2001). It is not wonder that the distortion of body perceptions is perceived as the building blocks of eating pathology (Bruch, 1974).

The psychological construct of personality has located certain vulnerable traits that may predispose individual to developing eating related pathology (Woodside, 2004). The psychodynamic perspective directed attention to the defence mechanisms associated with negative emotions, the search for autonomy and the disturbance in object relations that were understood to be a contributing factor in the onset of eating pathology. The cognitive behavioural model focused on the core belief systems and body dysfunction that interplay to create the unhealthy relationship with food and eating. Therefore, under the biological tenets, sociocultural tenets and psychological tents, there appears to be a complex

integration of various factors that contribute to the development of eating pathology. However, there is still some uncertainty on the relative influence and interplay of variables that provide the basis for the development of the specific disorders anorexia nervosa, bulimia nervosa and EDNOS.

Nevertheless, there appears to be a strong link between the various dimensions of the biopsychosocial model in understanding the complex development of eating pathology. Therefore, in line with the primary research questions, the main focus of this research is on examining the relationship of eating disorders and specific personality traits. Thus, it is now fitting to finalise this chapter with a discussion of whether a relationship exist between the psychological construct of personality and eating related disorders.

2.5 The relationship between personality traits and eating pathology

2.5.1 Introduction

In literature on eating disorders, the influence of personality has been investigated with the focus being on individuals with anorexia nervosa and bulimia nervosa (Pryor & Wiederman, 1996). The possibility that eating disorders are not observed across personality characteristics raises the assumption that only certain types of personality traits are responsible for predisposing individuals to develop eating disorders (Delport, 2005; Leon et al., 1993). This research will expand on this by focusing on personality traits in individuals with eating pathology.

2.5.2 Personality and eating disorders

The relationship between personality and psychopathology (eating disorders) can be assessed by three related aspects of personality structures, 1) the functional domain, 2) levels of personality disturbance, 3) personality configuration (Western, Gabbard & Blagov, 2006). Accordingly, the functional domain was utilised in this study to assess personality traits that are related to the development of psychopathology (eating pathology). This model is crucial in understanding the ways people become symptomatic. The next domain perceives personality disturbances on a continuum that reflect the extent to which an individual is able to adequately function in everyday life. Finally, the forms of personality organisation deals with the different personality disorders and styles that is apparent in individuals where personality factors are primarily complications of the disorder (Westen et al., 2006).

In light of the important role that personality plays in the development of psychopathology, various authors have attempted to identify the personality traits that are related to eating dysfunctions (Pryor & Wiederman, 1996; Thompson- Brenner & Westen, 2005; Westen & Harnden-Fischer, 2001). The following sections will focus on the specific personality traits observed in individuals with anorexia nervosa and bulimia nervosa. Furthermore, the role of males with eating disorders will be discussed. Thereafter, a synopsis of binge eating disorder listed under the EDNOS category will be assessed to provide a more comprehensive overview of vulnerable personality traits implicated in the development of eating related pathology.

2.5.2.1 Anorexia nervosa

Most of the research on anorexia nervosa has primarily focused on females (Pryor & Wiederman, 1996; Westen & Harden-Fischer, 2001). Anorexics tend to display characteristics such as introversion, low novelty seeking, neuroticism, socially conscious, compulsive, cooperative, serious, rule conscious, low levels of interoceptive awareness and harm avoidance (Pryor & Wiederman, 1996). Furthermore, studies have consistently demonstrated that characteristics such as being obsessive compulsive, perfectionistic, moralistic, persistent and achievement orientated are associated with individuals with anorexia nervosa (Cassin & von Ranson, 2005; Fassino, Pierò, Gramaglia, Abbate-Daga, 2004; Hewitt, Flett & Ediger, 1995; Kleifeld Sunday, Hurt & Halmi, 1994; Sohlberg & Strober, 1994).

2.5.2.2 Bulimia nervosa

The personality traits of bulimics vary widely and comprise of a heterogeneous group in comparison to anorexia nervosa. Common personality traits linked to bulimia nervosa include impulsivity, high levels of novelty seeking, low persistence, neuroticism, harm avoidance, sensation seeking, perfectionism, obsessional traits, forcefulness, anxiety and affective sensitivity (Cassin & von Ranson, 2005; Faust & Schreine, 2001; Fassino et al., 2004; Favaro et al., 2005; Pryor & Wiederman, 1996; Westen & Harnden-Fischer, 2001). These individuals are perceived as more social when compared to anorexics (Pryor &

Wiederman, 1996) and display characteristics of fluctuating dysphoric mood states, ranging from depression to elation (Kleifeld et al., 1994; Scott & Baroffio, 1986).

While eating disorders (anorexia nervosa and bulimia nervosa) are associated with specific personality traits, the overall consensus is that there are possible vulnerable traits that work interchangeable and in degrees to significantly influence the onset of either anorexia nervosa or bulimia nervosa. (Thompson- Brenner & Westen, 2005; Westen & Harden-Fischer, 2001). Costin (1999) suggests that individuals with eating disorders have a dichotomous black or white thinking. These individuals are associated with feelings of emptiness, desire to be special, in control, the need for power, lack of coping skills, difficulty expressing feelings, lack of trust in self and others and the fear of not measuring up to a certain expectation.

Furthermore, the high functioning perfectionist attitude observed in both anorexics and bulimics describe individuals that are conscientious, articulate, self critical, guilt ridden and anxious (Westen & Harden-Fischer, 2001). The constricted, over controlled persons are inhibited and have a limited range of emotion. These people are passive, unassertive and have difficulty expressing their wishes. In addition these individuals avoid interpersonal relationships as they feel inadequate, inferior and misunderstood (Sohlberg & Strober, 1994; Thompson- Brenner & Westen, 2005). Finally, eating disordered individuals are emotionally dysregulated and under-controlled. This implies that the emotions experienced can be impulsive and change rapidly or unpredictably (Thompson- Brenner & Westen, 2005; Westen & Harden-Fischer, 2001).

2.5.2.3 Personality and eating disorders in males

In many studies the relative association of eating disorders with personality has been done predominately in female clinical samples. Research investigating the personality of males with eating disorders suggests that males appear to be less at risk than females for presenting characteristics such as perfectionism, harm avoidance, reward dependence and cooperativeness (Woodside, 2004). Furthermore, males tend to show lower scores on drive for thinness, impulse regulation and body dissatisfaction. In addition, males are more inclined to display a considerable degree of anxiety with regard to sexual activities and relationships (Fichter & Daser 1987).

Personality characteristics such as dependent, avoidant and passive aggressive were commonly observed in male sufferers (Kearney-Cooke & Steichen-Asch, 1990). Garfinkel and Garner (1982) indicated that males presented with co-morbid pathologies such as affective, obsessional and anxiety disorders. Similar to females, many male sufferers exhibit traits such as social withdrawal, anxiety, irritability, low mood, and poor concentration (Sharp, Clark, Dunan, Blackwood & Shapiro, 1994). However, unlike females with binge eating symtomatology, males are less likely to eat in response to negative emotions such as anxiety, anger, frustration and depression (Tanofsky et al., 1997). The primary diagnosis of eating disorders in males is usually made when these individuals strive to achieve autonomy and effectiveness through external control (weight, food) (Alexander-Mott & Lumsden, 1994).

Having provided an overview of personality and eating disorders (anorexia nervosa, bulimia nervosa) in males and females, the research will focus attention on the relatively less researched phenomenon of binge eating disorder. The following section will focus on the specific personality traits that are commonly associated with binge eating disorder.

2.5.2.4 Personality and binge eating disorder

Certain personality traits have been associated with the development of binge eating disorder (Dunn & Ondercin, 1981). In the study done by Markus, Wing, Ewing, Kern, Gooding & McDermott, (1990) the personality characteristics observed in binge eating related to being anxious. This finding is supported by numerous other researchers (Greenberg, 1986; Spitzer et al., 1993). It has been hypothesised that these individuals bind their anxiety and displace it onto somatic concerns (eating) which results in the development of eating disorders such as binge eating disorder (Scott & Baroffio, 1986). Emotional distress such as anxiety and depression has been associated with the onset of binge eating episodes (Gold, Frost-Pined & Jacobs, 2003; Leon et al., 1995; Markus, Smith, Santelli & Kaye, 1992; Milos, Spindler & Schnyder, 2004; Schwarze et al., 2003).

Accordingly, a general negative perception of the self including a lack of will power and feelings of rejection and unworthiness were observed in binge eaters (Naute, Hospes, Jansen & Kok, 2004). Negative self evaluation is a combination of low self esteem and self focused attention (Heatherton & Baumeister, 1991). Directing attention towards the act

of binge eating is a form of escape to reduce negative self awareness and low self esteem (Mussell, Binford & Fulkerson, 2000; Schwarze et al., 2003).

However, many sufferers report that binge eating is triggered by additional mood states such as worry and boredom (Cooper, 1995; Gold et al., 2003). In addition, a comparison of binge eating disorder and bulimia nervosa revealed that binge eaters scored lower on the temperament dimension 'persistence' than their bulimia nervosa counterparts. In essence, binge eaters were not able to restrain themselves from binge eating (Vervaet, van Heering & Audenaert, 2004). However, similar to bulimia nervosa, individual with binge eating disorder score higher on characteristics related to sensation seeking (Rossier, Bolognini, Plancherel & Halfon, 2000).

In addition, other studies have recognised qualities in individuals with binge eating disorder such as self criticism, sensitivity to people's approval and disapproval, apprehension, insecurity, tension, self blame, irritability, frustration, suspicious and over excitability (Belangee et al., 2003; Dunn & Ondercin, 1981; Dominy et al., 2000; Dunkley & Grilo, 2007; Goldfein, Devlin, Spitzer, 2000; Molinari & Ragazzoni, 1997). The high tension experienced by binge eaters is associated with feelings ranging from tension to fury where the anger is directed both internally and externally (Fassino et al., 2003).

A person that develops a suspicious personality trait may be vulnerable to introverted qualities such as being shy and distrustful of others as a means of protection from harmful experiences (Belangee et al., 2003). Scott and Baroffio (1986) suggested that anorexia nervosa and binge eating disorder are similar on the introversion trait because they present

with the physical manifestation (emancipation and obesity) of their condition which inadvertently results in them being suspicious that society is aware of their disordered eating and physical state.

Common trends observed in binge eating disorder are sensitive and dependent characteristics (Goldfein et al., 2000; Marcias & Leal, 2000). Closely tied with sensitivity is the narcissistic tendency of grandiosity, entitlement, putting the needs of others before one's own and lack of empathy (Brunton et al., 2005). Dependency in binge eating disorder has been related to a dependence on others for acceptance, admiration and feedback validation (Goldfein et al., 2000; Narduzzi & Jackson, 2002). This result is in line with the findings of Greenberg (1986) where lack of assertiveness was observed in individuals with binge eating disorder.

It has been well documented that impulsivity is frequently observed in individuals with binge eating disorder (Arias et al., 2006; de Zwaan et al., 1994; Favaro et al., 2005). The literature defines impulsivity as the inclination to choose smaller immediately available rewards over larger delayed rewards. In addition, it relates to the inclination to respond quickly without forethought or attention to consequences (de Zwaan et al., 1994; Molinari & Ragazzoni, 1997; Nasser, Gluck & Geliebter, 2004). It was suggested by research that both obsessive compulsive (irrational, obsessive, neurotic) attitudes and impulsive traits (reckless, spontaneous) were perceived to co exist in bulimia nervosa and binge eating disorder (Molinari & Ragazzoni, 1997; Nasser et al., 2004). However, findings suggest that individuals with binge eating disorder tended to exhibit more impulsive traits while people

with bulimia nervosa showed more evidence of compulsive traits (Raymond, Neumeyer, Thuras, Weller, Eckert & Crow & Mitchell, 1999). Furthermore, the anger emotion experienced by binge eaters has been associated with the impulsive tendencies (Fassino et al., 2003).

In addition, feelings of ineffectiveness, stronger perfectionistic attitudes, self consciousness, less self-esteem, feelings of helplessness and less interoceptive awareness were more likely to be exhibited in binge eating individuals (de Zwaan et al., 1994; Fasino et al., 2004; Molinari & Ragazzoni, 1997; Pratt, Telch, Labouvie, Wilson & Agras, 2001; Scott & Baroffio, 1986; Schwartz, 1998; Webber, 1994). The perfectionist characteristic is associated with a self critical, self righteousness, meticulous attention to detail, scrupulousness and moralistic characteristics (Aragona & Velle, 1998). These perfectionistic individuals set very high standards for themselves and strive assiduously to meet them (Cooper, 1995; Webber, 1994). According to Fassino et al (2004) the level of introceptive awareness is altered in individuals with eating disorders. However, individuals with bulimia nervosa score higher on this trait than those with anorexia nervosa and binge eating disorder.

Therefore, there is a wealth of information relating specific personality traits to eating disorders. Although eating disorders (anorexia nervosa, bulimia nervosa and binge eating disorder) share similar personality traits, the distinctions are made clear by the clinical description and nature of the eating pathology. In essence, there is support for the role of

personality traits in the development and maintenance of eating pathology, in particular binge eating disorder (Dunn & Ondercin, 1981; Schwarze et al., 2003).

2.6 Conclusion

Eating dysfunction (anorexia nervosa, bulimia nervosa, EDNOS) are complex syndromes that manifests serious physical and psychological problems for individuals. In this study, the researcher has attempted to explain the different factors according to the biopsychosocial model that may predispose individuals to develop eating pathology. The biological dimension of the biopsychosocial model with reference to the biological factor of age was considered. Thereafter, the sociocultural factors focused on the units of race, gender and socio-economic class. The psychological factors were discussed with particular attention given to the psychodynamic model, cognitive behavioural model and the influence of body perception on the propensity to develop eating pathology. Finally, the concluding feature of the chapter considered the primary aim of the research which involved the relationship between personality traits and eating disorders (anorexia nervosa, bulimia nervosa. This relationship can be considered to fall within the psychological dimensions of the biopsychosocial model.

Therefore, having already provided a comprehensive overview of eating related disorders, body perceptions and how eating pathology is related to personality, it is necessary to focus on the remaining construct of personality. In particular, the definition and various theories of personality will be assessed in chapter three in order to provide a theoretical perspective

on the personality variables that have been implicated in the development and maintenance of eating disorders.

Chapter 3: Personality theory

3.1 Introduction

The word personality originated from the Latin ‘persona’, a theatrical mask worn in Greek drama by Roman actors (Feist & Feist, 1998). The ‘persona’ or mask was used as a metaphor to project a false appearance of the role one plays in life (Feist & Feist, 1998). The implication of this meaning is that below the surface or public appearance, there is a private, perhaps different person that is concealed from view (Monte, 1999). It is within this framework that the study of personality is understood. Many theorists realise the dynamics of the actor or mask metaphor and recognise the complexities of the task of conceptualising and understanding real people (Monte, 1999). Thus, a barrage of paradigms has been created to account for the intricacies of individual differences. From the onset, personality theorist have differed amongst themselves as to the meaning or precise definition of personality (Monte, 1999). Many unique theories and concepts have evolved to account for the nature of human personality. However, the basic premise that binds all personality theorists together is the desire to understand and conceptualise individual differences and commonalities among people (Monte, 1999).

Personality theories work at different levels of explanatory complexity. Psychologists generally agree that a complete theory of personality should address the questions of what are the characteristics of the person and how are they organised (personality structure), as

well as how these characteristics develop and change over different contexts (i.e. personality process) (Pervin & John, 2001). In order to investigate personality in individuals inclined to develop eating pathology, this research relied on the Cattell's trait theory of personality as it has demonstrated the issue of both individual differences and similarities in personality characteristics and the complexity of personality organisation and dynamics (Dawda, 1997). Furthermore, the trait approach appears to include the broadest range of theoretical explanations to account for human personality (Cattell, 1965).

Considering that the researcher is seeking to describe consistencies in the behaviours of individual predisposed to developing eating pathology, the trait theory of personality appears to address this issue most competently (Pennington, 2003). In addition, the trait approach caters for real life implication such as body perceptions, age, race and socio economic class that account for individual differences (Hall & Lindzey, 1998). Furthermore, it is important in predicting criteria such as psychopathology, in this case binge eating (Cattell, 1965). In essence, the trait approach as proposed by Cattell appears to have fewer critiques and provides the most researched and empirical understanding of personality. Furthermore, Cattell as a theorist is recognised as one of the most important and influential trait psychologist of the 20th century (Cattell, 1965; Pennington, 2003).

Similar to different paradigms of personality, Cattell's approach has been influenced by other theories (environmental, social, biological, genetic and learning theory) in the conceptualisation of personality (Cattell, 1965; Dawda, 1997). This chapter will focus in particular on some of the theories that have significantly influenced the development of

Catell's theory of personality. The following discussion will demonstrate how the various schools of thought on personality, although distinctive from each other are all linked by their degree of influence on Cattell's trait theory of personality. Before the link can be established, a detail discussion of Cattell's theory will be presented in order to provide a basis for understanding the theoretical construct of personality according to Cattell. Thereafter, the work done by Allport in influencing Catell's trait approach will be examined. Furthermore, the significant role of the psychodynamic perspective and genetic theory of personality will be analysed. In addition, the social learning theory of personality had a minor influence on Cattell's trait theory; therefore a brief discussion will be presented.

However, it is necessary to firstly construct an appropriate definition of personality as there are many perceptions of personality according to various paradigms (Eysenck, 1984). By discussing these constructs a holistic and comprehensive understanding of the complex and dynamic nature of personality will be presented (Ewan, 1998).

3.1 1 Definition of personality

Currently, there exist a plethora of definitions for personality (Hergenhahn & Olson, 1999). The psychoanalytic theory focuses on the understanding that true personality is connected to an inner entity that makes humans unique (the id, ego, and superego) (Ewan, 1998; Krech & Crutchfield, 1969). The behaviouristic view relies on the external value of the person as he/she presents himself to the world (Boeree, 1998). It defines personality as the

sum of activities that can be explained by observations as human behaviour is reflected in personality (Boeree, 1998). The humanistic school of thought suggests that humans are unique and a definition of personality will not be able to integrate a universally applicable theory to understand all people (Feist & Feist, 1998). Systems that address personality as a combination of qualities or dimensions are referred to as trait theorist. The trait theorist Allport believed that personality is contained within the person. It is dynamic and constantly changing or becoming something different (Ewan, 1998; Hergenhahn & Olson, 1999). According to Cattell (1965) personality is determined by distinctive and stable underlying traits, which reflect fundamental individual differences in genetic make-up. In essence, traits are the units of personality that have predictive value (Cattell, 1965; Cloninger, 2004).

Despite the vast array of definitions of personality, most theorists do agree that personality is dynamic and organised according to characteristics that are inherent in a person (Ewan, 1998). They work to uniquely influence cognition, motivations and behaviours in various situations (Ryckman, 2000). Personality is one of psychology's intriguing and most challenging areas of study because one can never fully decipher or understanding the nature of personality (Ewan, 1998; Krech & Crutchfield, 1969). The common view of personality is that it is a complex construct that encompasses an individual's unique genetic background and environmental factors. It is a system of enduring, inner characteristics of individuals that contribute to consistencies in their behaviours. It is therefore a scientific study of individual differences in thought and behaviour (Schultz & Schultz, 1998). In order to expand on the personality construct, the preceding discussion will present the trait

theory as proposed by Cattell and then move on to illustrate the influence of other theories on Cattell's trait theory of personality.

3.2 Trait theory of personality

3.2.1 Historical context

The earliest known theory of personality to adopt a trait approach was the Greek physician Hippocrates (400B.C.) (Pervin & John, 1999). He characterised human behaviour in terms of four temperaments, each associated with a different body fluid or 'humor' (Pervin & John, 1999). The optimistic type was associated with blood, the slow and lethargic type was associated with phlegm, the melancholic type with black bile and the angry type was linked to yellow bile (Pervin & John, 1999). Furthermore, he also believed that body type was associated with physical disease, for example, people with short bodies were prone to stroke and those with tall thin bodies to tuberculosis (Pervin & John, 1999). The inadequacies of such typology are clearly evident. In recent years, the development of a scientific theory of personality was evident in the trait approach (Cattell, 1965; Eysenck, 1984). This method applied the tools of empirical observation to systematically categorise individuals into distinctive traits or types (Ewan, 1998; Eysenck, 1984).

3.2.2 Conceptualisation of traits

The main theorists have been Gordon Allport, Raymond B Catell1 and Hans Eyserick (Feist & Feist, 1998; Ryckman, 2000). According to trait theorist, human behaviour can be summarised by a few traits (Hergenhahn & Olson, 1999). Cattell (1965) proposed that traits are the building blocks of personality. It accounts for consistencies and similarities in human behaviour (Kassin, 2003; Ryckman, 2000). Furthermore, it explains why people respond differently to the same stimuli. This approach is a scientific and objective method used to identify and measure key traits underlying personality (Kassin, 2003). It is evident that traits determine characteristics that are stable over time and situations. Traits describe individual differences and are bipolar in nature (e.g. extroversion and introversion) (Goldberg, 1993). They are continuous and can be distinguished from states. A state is a temporary way of interacting and dealing with self and others (Feist & Feist, 1998)

Traits develop through a combination of innate needs and learning (Cattell, 1965; Costa & McCrae, 1992; Eysenck & Eysenck, 1985; Feist & Feist, 1998). Due to reward and punishment as a result of environmental and social situations (peers, family etc), various patterns of personality do arise. This viewpoint is consistent with findings on genetics and personality, which indicate that identical twins have similar personalities (Larsen & Buss, 2002; Pervin & John, 2001).

Guided by this assumption, investigators attempt to find specific positions on one or more trait dimensions, which remain stable over time (Schultz & Schultz, 1998). Several layers

of traits make personality consistent and therefore understandable, but also unique and therefore individual (Schultz & Schultz, 1998). Trait psychologists rely heavily on factor analysis to identify basic elements that underline sets of related variables (Eysenck, 1984; Goldberg, 1993).

There is little agreement concerning the number of traits necessary to represent all the dynamics of personality. For example, Eysenck (1967, 1991) asserted that there are 3 major traits, while Cattell (1965) proposes that there are 33 traits and there could be much more. Thus, describing personality with so many traits can produces complex mathematical representations such as factor analysis. Yet, when trait theorists are faced with the task of describing personality, they use traits to account for similarities in behaviour and to explain why people respond differently to the same situation (Hergenhahn & Olson, 1999).

3.2.3 Critique of trait theory

The strength of trait theory is its ability to rely on statistical or objective data (Goldberg, 1993). Understanding traits allows one to compare people and to determine which traits facilitate in specific behaviours (Eysenck, 2004). Furthermore, traits can also be used as important predictors such as psychopathology (Kassin, 2003; Ryckman, 2000). However, traits are poor predictors of future behaviours and do not provide an explanation of personality development (Fehringer, 2004). In addition, because trait theory provides no understanding of how a trait develops, it also provides little or no guidance on how to alter

the negative aspects of a trait (Pervin & John, 2001). Furthermore, another criticism that does not apply to Cattell's work is that traits are not consistent across situations; they vary and can change depending on the situation a person is experiencing (Pervin & John, 2001). For instance, a person might appear introverted in public but around friends they can become quite boisterous and extroverted.

The discussion of traits has set the framework for the introduction of Cattell's theory of personality. As already mentioned, this paradigm has been the primary focus of the present study. Therefore, a detail discussion of the theory will follow where the fundamental tenets of Cattell's theory will be presented. Furthermore, the theory will be expanded to include the relative influence and contributions made by other schools of thought on Cattell's approach to personality development.

3.2.4 Cattell's trait theory of personality

Science is always striving to develop a methodology to address questions by using a common set of principles. In an effort to understand different personalities in humans, Raymond B. Cattell, expanded on the ideas of science and retained the belief that a common taxonomy could be developed to explain personality differences.

Cattell (1965, p. 27) defines personality as determining "*behaviour in a defined situation and a defined mood.*" He presented the definition as a formula:

$$R = f\,(S, P)$$

This mathematical concept demonstrates that the behavioural response of a person (R) is a function of the situation (S) and the individual's personality (P). Cattell has thus developed his theory to include aspects of the environment that plays a role in influencing behaviour (Ryckman, 2000). He maintained that the environment along with personality traits are important in influencing behaviour. Cattell set out to summarize the research already completed by his predecessors (Allport) and to draw up a theory that further promoted the effectiveness of trait theory (Cattell, 1965). Cattell's theory of personality can best be explained via the diagrammatical representation of his theory as proposed by Silva (2002). This can be viewed on page 78, to gain further insights into the intricacies and facets of his model.

According to the theory, Cattell focused his attention on three sources of data or media's of observations in his methods of observations (Hall & Lindzey, 1978). The L data, or behaviour rating in the life situations deals with behaviour in everyday life as observed by others. The L data includes both objective information called L (T) data (facts that are substantiated) and more subjective rating called L(R) data (rating from friends) (Feist & Feist, 1998; Hall & Lindzey, 1978). The L data is used as guidelines for gathering the Q and T data (Cattell, 1965). The second source of information is the person's self report or Q data, which is based on questionnaires that require a person to respond to questions on the basis of self observation and introspection (Pervin & John, 2001). The third method of observations was the T data or information obtained from objective tests.

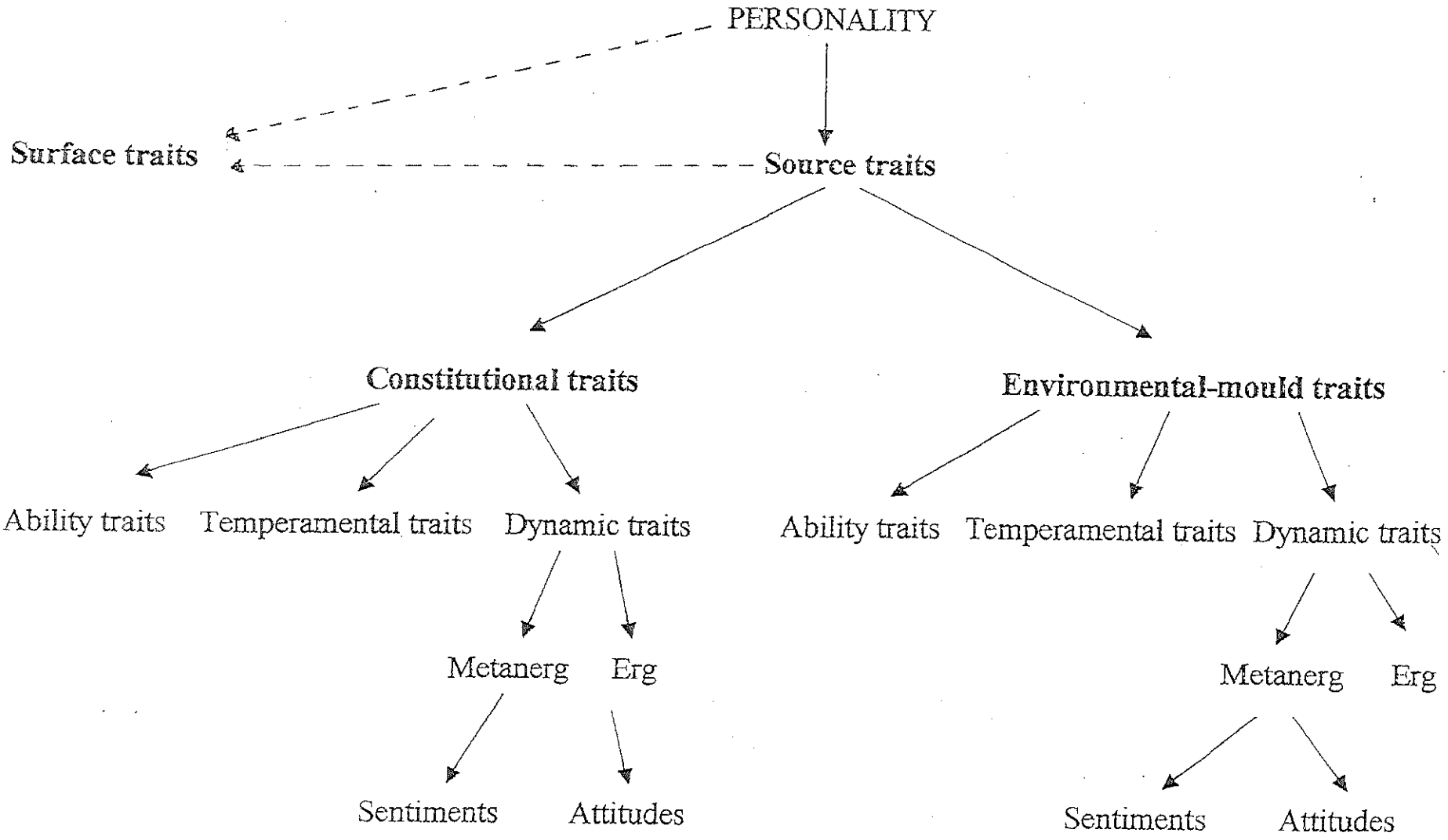


Figure 2: Diagrammatic representation of Cattell's theory of personality (Silva, 2002, p. 41)

The purposes of these tests are not revealed to the participants and these data include such observations as cognitive ability, response to humour, reaction time and many more (Feist & Feist, 1998; Pervin & John, 2001).

Factor analysis was extensively used by Cattell to identify traits (Cattell, 1965). The purpose of this analysis was to summarize large data sets with a few dimensions and to derive source traits from surface traits (Eysenck, 2004; Goldberg & Digman, 1994). Cattell employed the P technique, a correlation method that involved one person taking one or more test on many occasion to identify traits that are common to a specific individual (Feist & Feist, 1998; Hall & Lindzey, 1978; Pervin & John, 2001). The differential R (dR) technique was also devised to correlate scores of a large number of people on many variables. The P and dR techniques should complement each other in determining common states or mood patterns (Feist & Feist, 1998).

According to Cattell, what arises out of factor analysis (i.e. the L, T and Q data) is best characterised as a source traits (Catell, 1950a, 1952; Hall & Lindzey, 1978 Hergenhahn, 1994). Source traits are smaller in number than surface traits but they are better predictors of behaviours. They constitute the most important part of a person's personality since they are caused by behaviour (Schultz & Schultz, 1998). As already mentioned, the role of the environment and heredity is significant in determining personality traits. Hence the development of constitutional traits and environmental mold traits are recognised (Ryckman, 2000). Constitutional traits are determined by biological factors (genetics) and

environmental mold traits are influenced by the experiences in the environment (culture) (Ryckman, 2000).

Not all observed data can be perceived as a source trait. The surface traits represent trait indicators (Eysenck, 2004; Feist & Feist, 1998). They are caused by an overlap of one or more source traits and furthermore a source trait can influence several surface traits. Cattell defines surface traits as a collection of trait elements which are suitable for different individual's and circumstances (Hergenhahn, 1994; Ryckman, 2000). Individual differences of heredity and upbringing will cause surface trait patterns to vary in different individuals. The underlying factor responsible for the intercorrelation among surface traits is source traits (Cattell, 1952; Feist & Feist, 1998).

A third dimension of traits is the classifying of them into temperament, motivation (dynamic) and ability (Carver & Scheier, 1988; Feist & Feist, 1998). Traits of temperament are concerned with how a person behaves in terms of the speed, energy and emotion with which a person responds to a situation. It is independent of a stimulus. It is significant that Cattell found both normal and abnormal temperamental traits (Cattell, 1965). Motivational analysis deals with why one behaves in a particular manner. It refers to one's interest and motivations. Cattell recognizes motivation traits that underline the dynamics of personality (Hergenhahn, 1994).

These include attitudes, ergs and sems (Hall & Lindzey, 1978; Pervin & John, 1999). An attitude is a concept with a specific course of action, or a desire to respond to a given

situation. Cattell believes that motivation is a complex construct and that a network of motives or dynamic lattice is involved with nearly every attitude. Some motivations are subsidiaries to others. They are directed towards sub-goals that must be reached in order to attain the next goal (Feist & Feist, 1998). Innate drives or motives are called ergs. This drive is inherent in unlearned drives such as sex, hunger and anger etc. Sems refers to learnt or acquired dynamic traits. Sems are socially acquired and receive their energy from the ergs (Feist & Feist, 1998; Hergenhahn, 1994). Cattell categorises these traits as either common or unique.

Common traits refer to characteristics shared by many people for example; intelligence and unique traits are those that are specific to one person (Cattell, 1965; Ryckman, 2000). Ability refers to how fast one can perform. It basically determines how effective a person works towards a desired goal. The most important of the ability traits are intelligence, verbal ability, spatial ability, musical aptitude and memory. These can be classified into abilities to acquire and maintain (Pervin & John, 1999; Ryckman, 2000).

Cattell developed a number of psychological testing instruments to measure the different sets of factors that he developed (Cattell, 1965). Of particular importance to this research are the normal temperamental factors, which are measured by the Sixteen Personality Factor Questionnaire (16 PF)[8] (Cattell, Eber & Tatsuoka, 1970). The 16PF is considered one of the first objective measures of personality and is comprised of 16 primary factor scales and five global factor scales.

[8] For a detail discussion on the 16 PF personality factor refer to page 117 of the Methods chapter

3.2.4.1 Critique of Cattell's theory of personality

Cattell has built his theory inductively without relying on the preconceived notions of what personality ought to be (Cattell, 1965; Kassin, 2003; Feist & Feist, 1998). This empirical procedure has provided a sound method for producing and building a theory with precise measurements (Feist & Feist, 1998). Furthermore, Cattell's theory seems economical by including source traits to cover both abnormal and normal behaviour (Eysenck, 2004). Cattell provided much to personality research through the use of factor analysis and the contributions made by both biological and sociocultural factors in influencing behaviour (Cattell, 1952, 1965). However, the theory is greatly criticized (Hergenhahn & Olson, 1999; Pervin & John, 2001).

The most apparent criticism of Cattell's sixteen personality factor (16 PF) is the fact that despite many attempts his theory has never been entirely replicated (Pervin & John, 1999). The source traits that Cattell found (16 factors) have not been replicated and research indicates that there might be only five factors (Pervin & John, 1999). His data accounts for ambiguities and subjectivities since Cattell only used certain trait factors for analyses. Despite all the criticisms of Cattell's hypothesis, his empirical findings lead the way for investigations and later discovery of dimensions of personality (Pervin & John, 1999). Furthermore, the classification system employed by Cattell is a useful guide to researchers and theory builders (Feist & Feist, 1998).

The next area to be considered is Allport's trait theory of personality. The work of Gordon Allport (1897-1967) is significant as it the lays the foundation for the development of Cattell' trait theory of personality. Allport examined the ways in which traits combine and interact to form normal personalities. He cataloguing over 18,000 separate traits and proposed that each person has about seven central traits, which dominates his/her behaviour (Allport, 1960). Cattell expanded on Allport's research by finding specific ways to group clusters of traits through a process known as factor analysis and thereby reduced the extensive lists of traits to 16 groups of interrelated characteristics (Pervin & John, 2001). The following discussion will provide a discussion of the theory proposed by Allport.

3.3 Allport's trait theory of personality

Like Cattell, Gordon Allport proposed that personality is unique and a few traits can be used to explain human behaviour (Allport & Allport, 1921; Allport, 1937; Feist & Feist, 1998). He believed that conscious values shape personality. According to Allport, the characteristics and behaviours that motivate human actions involve functioning in a manner that expresses the self (Allport, 1937; Boeree, 1998). It involves being proactive and future orientated (Boeree, 1998). Allport put a lot of emphasis on the self or proprium (Ryckman, 2000). The definition of the proprium proposes that the self is composed of the aspects of one's experience or personality that is seen as most essential and makes for inward unity (Ryckman, 2000). In his view, the proprium or self develops continuously and moves through a series of stages (Ryckman, 2000).

Allport believed that traits are unique to every individual (Allport & Allport, 1921; Allport, 1937). Within any particular culture there are common traits; ones that are part of that culture that everyone in that culture recognizes (introvert and extrovert). Some traits are more closely related to the proprium (one's self) than others. Central traits or dispositions are the building blocks of one's personality. Secondary dispositions are qualities that are not so obvious or consistent in individuals. Preferences, attitudes and situational traits are all examples of secondary traits (Allport, 1937; Boeree, 1998). The cardinal dispositions are traits that practically define one's life (e.g. greed).

Allport distinguishes the concept of type from trait by noting that a person may have a trait but cannot have a type. Rather, a person may fit into a specific type. Types typically display clusters of traits. Therefore, a person possesses a collection of traits that produces the type that is reflective of the person (Allport, 1937).

Allport had basically an optimistic and hopeful view of life and personality (Feist & Feist, 1998). He based his theory on philosophical speculation and commons sense rather than on original scientific investigations (Carver & Scheier, 1988; Eysenck, 2004). Allport's approach is fundamental as it moves away from the deterministic view of humanity and puts personality in perspective by defining concepts and categories (Allport, 1937). The precise use of language in this theory makes it both internally consistent and parsimonious (Feist & Feist, 1998).

The discussion so far has highlighted the trait approaches to personality and the fundamental facets of trait theory, namely the biological, evolutionary and behavioural aspect. The next section will present the psychodynamic perspective according to Freud, the biological account according to Eysenck, the evolutionary theory according to Buss and the social cognitive perspective according to Bandura as influential paradigms in contributing towards the development of Cattell's theory of personality.

3.4 The Psychoanalytic Perspective according to Sigmund Freud

Like Cattell, Freud, sought to explain personality development largely in biological terms proposing that the instinctual system are originated in the physical chemical processes of the body (Meissner, 2000; Monte, 1999; Ryckman, 2000). It is significant that elements of Freudian theory in terms of Freud's drives are expanded upon with regard to dynamic traits as proposed by Cattell. While different personality theorists use different terminology, Cattell's employments of specific personality traits (e.g. extroversion / Introversion, neurosis and psychosis) have shown up in consistent patterns across the psychodynamic school of thought. Furthermore, Cattell agrees with Freud that the development of the ego and superego is marked by conflict and that it is critical to the development of personality (Meissner, 2000; Ryckman, 2000).

The core feature of Freud's theory of psychoanalysis was his proposal of the instinctual system (Buss, 1999; Freud, 1910, 1922, 1923; Meissner, 2000). Freud saw all human behaviour as motivated by instincts, which he referred to as the life instincts (Freud, 1923).

The term libido was employed to denote the energy of the sexual or pleasure principle (Monte, 1999). The libido keeps individuals in perpetual motion. However, Freud began to believe that juxtaposed with the life instinct was the death instinct (Freud, 1923). He referred to a nirvana experience, a void, non-existence which is the eventual goal of all individuals (Feist & Feist, 1998). The evidence of the nirvana experience is mankind's desire for peace, escapism, suicidal ideation and forms of aggression, destruction and cruelty (Boeree, 1998).

The life and death instincts are seen as psychological drives, born into each human because each person possesses the survival instincts that were evident through the evolution of mankind (Polansky, 1991). These instincts are expanded upon according to Cattell's theory of dynamic traits. Thus, Freud proposed a dualism conception of mental energy that is inherent within all individuals (Freud, 1922, 1923; Monte, 1999). These instincts develop as a result of the three systems of the mind, the id, ego and superego that work at creating conflict and influencing behaviour (Ryckman, 2000). What follows is a brief overview of the three structures of the mind, the id, ego and superego.

The id translates the needs of individuals into motivational forces called instincts or drives (Freud, 1923; Meissner, 2000). Freud likens the id to a 'seething cauldron' that contains powerful urges and desires. It is the original aspect of personality that is rooted in the biology of the person (Freud, 1923; Meissner, 2000; Ryckman, 2000). The id works in keeping with the pleasure principle, which can be understood as the demand to take care of

needs immediately (Ryckman, 2000). It is the instinctual striving of needs and the determiner of drives within the personality (Freud, 1922, 1923; Polansky, 1991).

The ego relates to reality by means of the consciousness and it works to satisfy the wishes that the id creates (Freud, 1923; Polansky, 1991). The ego along with the id and superego form part of the inner qualities that make humans unique. It is part of the internal world (the unconscious) but it operates according to the reality principle. It represents reality and reason (Freud, 1922, 1923). It refers to a complicated organisation of psychological functions which includes understanding the world, processing information, learning and using skills, regulating drives and coping with internal anxiety (Polansky, 1991). However, it is a struggle to keep the demanding id happy. The superego is used to describe the internalisation of societal norms and regulations (Ryckman, 2000). There are two aspects of the superego; one is the conscious, an internalisation of punishment and warning and the other is the ego ideal. The superego also helps in adaptation and to helps individuals to avoid trouble in daily life. Its works to maximise pleasure and minimise pain (Polansky, 1991). The ego is exposed to conflicting forces from the id, superego and society which results in the development of various forms of anxiety (Freud, 1923).

Therefore, like Cattell, Freud was influenced by the biological basis in the understanding of personality with his portrayal of instinctual impulses (Freud, 1922, 1923). The following sections will expand on this discussion by demonstrating the contributions of the biological perspective on Cattell's theory on personality development.

3.5 Eysenck's biological perspective on personality

Firstly, it is important to mention that close parallels can be drawn between the work of Eysenck and of Cattell. Like Cattell, Eysenck formulated a unified research designed to increase knowledge and develop methods and materials for practical use (Hergenhahn & Olson, 1999). Cattell and Eysenck were similar in that both were trait theorists who relied on the biological explanation for personality. For instance, Eysenck believed that individual differences and personality functioning were mediated by something in the central nervous system (Monte, 1999). Furthermore, the important traits were those that are relatively permanent; they have a clear biological origin and facilitate in influencing secondary behaviour patterns that are acquired through learning (Hergenhahn, 1994). It is also apparent that both theorists use factor analysis to derive specific traits and types of personality. Although Eysenck believed that the environment makes an important contribution to overall behaviour and personality, he does not emphasise the role of the environment and learning in the development of traits (Hergenhahn, 1994). Types and traits were perceived as being genetically determined.

Eysenck defined personality as a stable and enduring component of a person's character (will), temperament (emotions), intellect, and physique (bodily configuration), which facilitate in determining a person's unique ability at adjusting to the environment (Ryckman, 2000). Being a behaviourist, Eysenck considered learnt behaviours of great importance, but more importantly he considered personality differences as growing out of our genetic inheritance (Boeree, 1998). Traits were perceived as stable and enduring

characteristics that when clustered together to form types. Each type is based on an observed correlation among various traits and each trait is developed from correlations among habitual responses. Habitual responses are specific observable responses to a given situation (Ryckman, 2000). Using the hypothetico-deductive method, Eysenck began his research with basic observational data. Thereafter, a hypothesis of the observed events was formulated and controlled conditions were established to test the validity of the hypothesis (Feist & Feist, 1998; Monte, 1999).

On the basis of factor analysis, two types were derived, introversion - extroversion and stability - neuroticism (Ryckman, 2000). Later, on the basis of other statistical analysis, a third type was introduced, impulse control - psychoticism. His explanation of psychoticism states that a person will display some qualities commonly found among psychotics, and that they may be more susceptible, given certain environments, to becoming psychotic. Examples of such psychotic tendencies include recklessness, disregard for common sense, and inappropriate emotional expression to name a few (Boeree, 1998). It is significant that the same three personality types are found universally despite differences among individuals and that these types show stability despite experiences that change and modify basic responses. Furthermore, the evidence provided by twin studies is consistent with the genetic hypothesis that heritability plays an important role in the development of a particular type (Ryckman, 2000). For Eysenck, the most important facet of any psychological assumption is that it be empirical, observationally testable and a source of new hypotheses (Monte, 1999).

3.6 Evolutionary theory of personality

Although Cattell is perceived as a trait theorist, Schultz & Schultz (1998) considers him to be a genetic theorist. This is in line with the contribution he has made to the study of behaviour genetics. For instance, Cattell has proposed that some traits are determined to a degree by nature while the environment determines other traits (Cattell, 1965). Furthermore, he developed an assessment tool that is highly useful in measuring the relative contributions of genes and environmental influences to personality functioning (MAVA). Therefore, Cattell, like evolutionary theorists, firmly endorses the role of genetics and the environment in the development of personality functioning (Cattell, 1965; Ryckman, 2000). Thus a brief overview of the evolutionary paradigm will be discussed as an adjunct to the trait theory as proposed by Cattell.

According to Buss (1999) evolutionary psychology tackles the issue of personality by referring to specific traits that have evolved to serve adaptive functions (Ryckman, 2000). Personality is the product of a long history during which it was advantageous for humans to adopt particular characteristic ways of thinking and behaving (Burger, 1993; Carver & Scheier, 2000; Feist & Feist, 2002) Evolutionary forces are most useful for understanding some of the broad trends in apparently instinctual drives. The diverse behaviours (traits) expressed by individuals are developed as a result of broad based temperaments that humans share with primates. Buss (1999) acknowledges three criteria for determining a characteristic as part of human nature. These are; the characteristics must be universal,

innate, difficult to modify, unconditioned and lastly it must have an adaptive function (Hall, Lindsey & Campbell, 1998).

Evolutionary theorists believe that both biology and the environment play a role in influencing behaviour. They endorse an interactional temperament model which states that the environment and temperamental traits mutually influence each other (Ryckman, 2000) According to Buss (1999) humans inherit broad temperamental traits which become more differentiated into specific components, for example aggression which may be differentiated as physical, verbal and passive aggression. Temperamental traits can also combine to produce unique behaviours, for example, a person who is sociable and dominant tends to seek socials status through sharing and working with others (Ryckman, 2000).

Nevertheless, despite all the contributions made by evolutionary psychologist to personality, it is still unclear as to how much of personality traits come from genetics and how much are influenced by the environment (Hall et al., 1998). However, it is clear that without imputing the significance of biological and genetic determinants of behaviour, the role of the environment is also implicated in influencing personality formation and it is an important feature in Cattell's theory of personality (Cattell, 1965).

As already mentioned, Cattell incorporated into his theory environmental determinants to explain the development of personality. Therefore it is necessary to explore the tenets of the social cognitive theory as it is influential in contributing to the tenets of Cattell's trait

theory of personality. Furthermore, the social learning theory according to Bandura has played a fundamental role in the understanding the aetiology of binge eating disorder[9].

3.7 Social Cognitive theory of personality

Similar to Cattell, the social cognitive theory proposed by Bandura suggests that personality is developed as a result from the interaction of behaviour, personal factors (cognition) and the environment (Carver & Scheier, 1988; Ryckman, 2000). Bandura argued that the fundamental factors that made up this integrated system included observation learning, self efficacy and self-regulation. Leaning is obtained through the observations of others performance (Feist & Feist, 1998). In Bandura's theory, social cognitive experiences play a central role in the development and modification of behaviour (Ryckman, 2000). The role of reinforcement is important as it accounts for human leaning. It does not occur without prior cognition.

Therefore, in order for a situation to be reinforced, a person must be aware of the connection between actions and their outcomes (Feist & Feist, 1998). Self efficacy describes the beliefs concerning one's ability to cope with a situation. It is determined by previous experience of success or failure, vicarious experiences, verbal persuasion and emotional arousal. Self regulation involves self observations and self reaction. This concept is assocaited with both observational learning and self-efficacy (Ryckman, 2000).

[9] See page 47 for a discussion on how human learning theory reinforces binge eating behaviour.

Therefore, the environmental influence of the social learning theory has played a contributary role in the development of traits as proposed by Cattell (Cattell, 1965).

3.8 Conclusion

The two complex factors focused on in this research were eating pathology and personality. The defining features, characteristics and aetiology of eating pathology were initially presented. Thereafter, the proposed relationship between eating related disorders and personality traits provided the impetus for a further analysis of the construct, personality, in order to provide a theoretical understanding of the personality traits implicated in the onset of disordered eating. The next chapter will expand on the discussion by providing a detail analysis of the methods utilised to carry out the present study.

Chapter 4: Methods

4.1 Primary aim

The primary aim of this study was to determine whether personality traits are associated with an inclination to develop an eating pathology.

4.2. Secondary aim

Furthermore, the research considered whether disturbances in body perception are evident in individuals inclined to develop eating pathology. In addition, the relationship between demographic variables (age, gender, race and socio-economic class) and the propensity to develop eating pathology were considered.

4.3 Research rationale

In western societies, there is an increase in the number of people diagnosed with eating disorders (Costin, 1999; Garner & Garfinkel, 1980; Stuppy, 2003). While there is in existent a plethora of research on anorexia nervosa and bulimia nervosa, little attention has been paid to individuals who present with mixed patterns of eating dysfunction and those who do not meet the current diagnostic category for a particular eating disorder (Fairburn,

1995; Stuppy, 2003). A lack of knowledge and awareness of this condition may result in inaccurate diagnosis with subsequent inappropriate treatment of the disorder. Thus, this research has focused exclusively on the multi-faceted nature of eating pathology in order to contribute towards research and increase the understanding of this condition. .Identifying the beliefs systems and behaviours in the early stages of dysfunction may be an essential means of reducing the onset and progression of eating disorder symtomatology altogether (Calderon, 2006). In addition, it would be important to determine whether the presentation of eating pathology in South Africa is congruent with the international literature in order to ascertain whether finding in international research on this subject may be relevant to the South African population.

Furthermore, the relative severity of the condition has led to a multidimensional explanation of eating pathology. Like anorexia nervosa and bulimia nervosa, numerous researchers have pointed to the biopsychosocial understanding of eating pathology (Costin, 1999; Eades, 1993; Mond et al., 2006). Therefore, the dimensional units within the biological, psychological and sociocultural models were investigated in order to provide a comprehensive discussion on the degree of influence they have towards the propensity to develop eating pathology. Thus, the biological and sociocultural models were considered in terms of the demographic units (age, race, gender and socio-economic class) in the development of eating pathology. Moreover, investigating the demographic variables may assist in enhancing the understanding and knowledge of the potential risk factors for eating dysfunction in South Africa. Furthermore, this information may facilitate in enhancing and strengthening cross-cultural treatment techniques and the understanding of pathology and

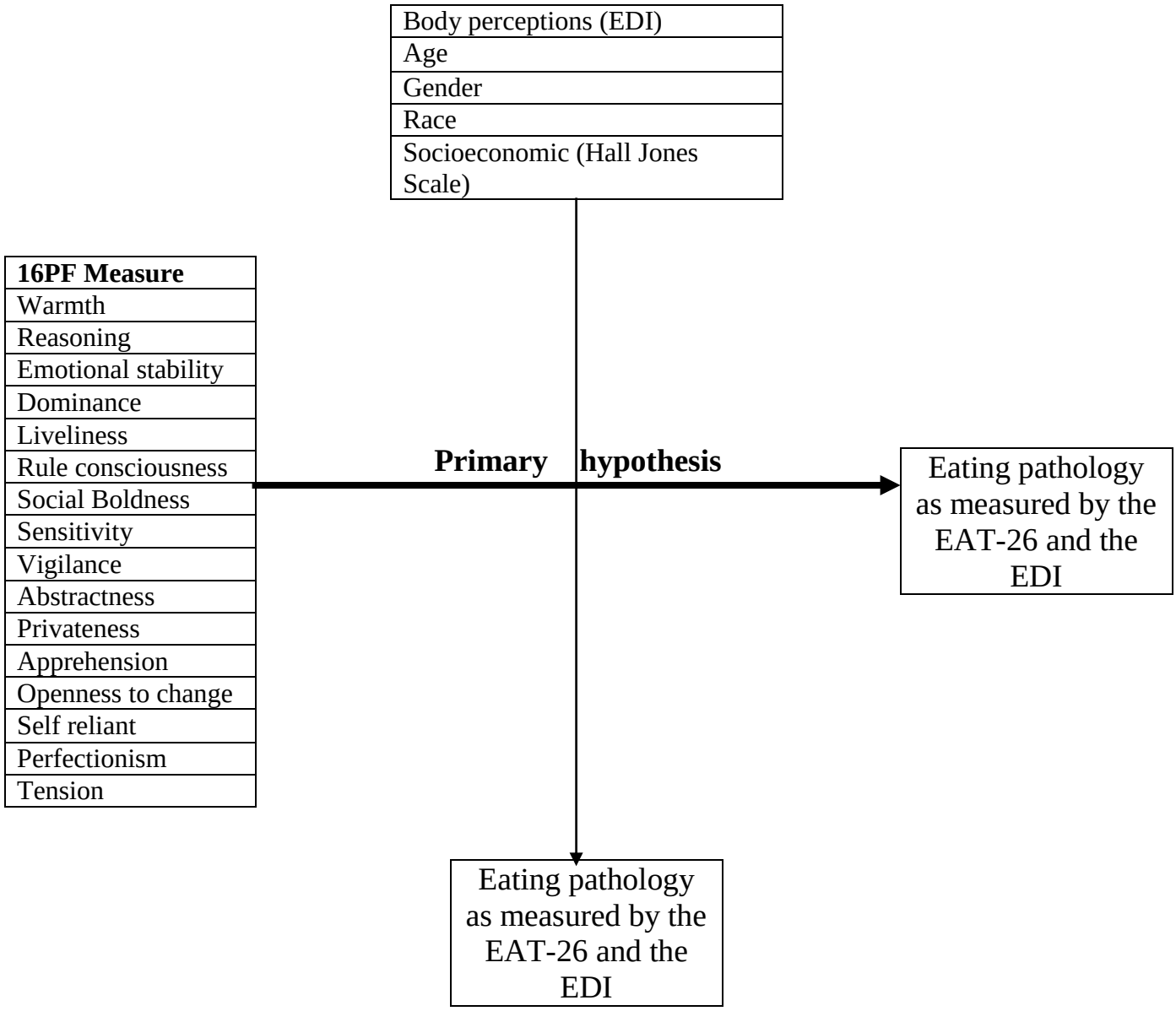
mental illness among the various cultures in South Africa (Zaider, Johnson & Cockell, 2000).

Turning attention towards the remaining dimension of the biopsychosocial model, the psychological factors, this research considered the role that body perceptions and personality has on predisposing individuals to develop eating pathology. Few studies have examined the relationship between personality and eating pathology prior to the onset and progression of maladaptive behaviours and attitudes of eating, thus there is a possibility that the true personality of the individual has been distorted by the episodes of eating dysfunction (Silva, 2002). Thus, this study will consequently investigate the non-clinical personalities of those vulnerable to develop eating related pathologies. Furthermore, studying personality characteristics may eventually enable us to identify individuals at heightened risk for developing eating pathologies.

In order to identify individuals at greatest risk for eating disturbances, it is necessary to improve understanding of variables that combine to increase vulnerability to the condition and variables that serve to maintain this condition. Therefore, this study will further investigate the role of body perception as an adjunct to the relationship between personality traits and the propensity to develop eating related pathologies.

In order to get a conceptual understanding of the causal relationships under investigation, a diagrammatical representation is presented in page 97 (Diagram 3); thereafter the research questions are presented.

Diagram 3: Diagrammatical representation of primary and secondary research hypotheses



4.4 Research Questions

4.4.1 Primary Research Questions

Is there a relationship between eating pathology as measured by the EAT-26 and EDI and specific personality traits as measured by the 16PF?

Do the 16 personality factors have an influence on the propensity to develop eating pathology as measured by the EAT-26 in conjunction?

Do the 16 personality factors have an influence on the propensity to develop eating pathology as measured by the EDI in conjunction?

4.4.2 Secondary Research Questions

Is there a relationship between body dissatisfaction as measured by the Body Dissatisfaction subscale of the EDI and the total EAT-26 and EDI scores?

Does age of the participant have an influence on the propensity to develop eating pathology as measured by the EAT-26 and the EDI?

Is there a relationship between the gender of the participants and the propensity to develop eating pathology as measured by the EAT-26 and the EDI?

Does race have an influences on the propensity to develop eating pathology as measured by the EAT-26 and the EDI?

Does socio-economic class have an influence on the propensity to develop eating pathology as measured by the EAT-26 and the EDI?

4.5 Research Hypothesis

4.5.1 Primary Research Hypothesis

A. There is a relationship between eating pathology as measured by the EAT-26 and the EDI and specific personality traits as measured by the 16PF.

B. The 16 personality factors influence the propensity to develop eating pathology as measured by the EAT-26.

C. The 16 personality factors influence the propensity to develop eating pathology as measured by the EDI.

4.5.2 Secondary Research Hypotheses

D. There is a relationship between body image disturbance as measured by the Body Dissatisfaction subscale of the EDI and the total EAT-26 and EDI scores.

E. Age is related to the development of eating pathology as measured by the EAT-26 and the EDI.

F. Gender is related to the development of eating pathology as measured by the EAT-26 and the EDI.

G. Race does have an influence on the propensity to develop eating pathology as measured by the EAT-26 and the EDI

H. Socio-economic class does have an influence on the propensity to develop eating pathology as measured by the EAT-26 and the EDI.

4.6 Research Design - Multi Method Approach

The research design combined qualitative and quantitative methods of data collection, analysis and inferences within difference phases of the research process in order to enrich the reliability of the results. This process was divided into two parts. The first part was the analyzing of data received from questionnaires using quantitative techniques. Upon analysis of the data, those participants identified with potential eating pathology symtomatology were recalled to participate in an interview process. The data received from the interviews were analyzed using content analysis (qualitative technique).This technique of using both quantitative and qualitative analysis is called the multi method approach (Creswell, 2003).

4.6.1 The definition and description

This approach was presented by Campbell & Fiske (1959) who were interested in converging different quantitative and qualitative data sources. The approach is the product of a pragmatist paradigm (Cupchik, 2001) where the focus of the research centres on combining the qualitative and quantitative research paradigms into a particular study. A paradigm is defined as a basic set of beliefs that work to guide a researcher's questions (Creswell, 2003). The assumption is that research is stronger when it mixes research paradigms because a more comprehensive and in depth understanding of human phenomena can be achieved. In addition, the multi method approach is used to expand an

understanding from one method to another and to confirm findings from different data sources (Creswell, 2003).

One of the most significant aspects of the multi methods approach is the triangulation model because it has often been used to account for the combination of qualitative and quantitative methods in academic research (Creswell, 2003). This feature (triangulation) was adopted for the present study because by collecting data using different methods and analysing the results with different strategies, there would be an improvement in the validity of results. Maxwell (1998) summarized the use of triangulation by saying that this method reduces the risk of systematic distortions that are inherent in the use of only one method.

4.6.2 Concurrent triangulation strategy

Triangulation is a method that may be defined as the use of two or more methods of data collection in the study of some aspect of human behaviour (Creswell, 2003). This muli-model design uses separate qualitative and quantitative methods as a means of reducing the weaknesses inherent within one method with the strengths of the other method (Creswell, 2003). According to Denzin and Lincolin (2000) triangulation is a means of securing an in depth understanding of the phenomena in question. It is not a tool or a strategy of validation but an alternative to validation. Therefore the combination of multiple methodological practices and empirical materials in a single study is a strategy that adds complexity and depth to any investigation.

Similarly, in the present study, by using this method, one obtained a more accurate view of the personality and body perceptions of students inclined to develop pathology. In addition a more comprehensive overview of the disease was acquired. In line with the triangulation method, the interpretations of results were integrated and either revealed the convergence of the findings (results were similar) or lack of convergence (results were not related). A strong knowledge claim of the research is made when there is a convergence of the finding (Creswell, 2003). Therefore triangulation creates an avenue for both the exploratory inductive process (qualitative research) that begins with empirical / observed evidence (quantitative) and progresses to a level of inference and deductive reasoning of the various hypothesis testing of theories.

In the design of this research, there was no manipulation of the independent variable as the researcher merely observed a phenomenon in a natural setting (Rosnow& Rosenthal, 1996). There was no random assignment as the sample was not allocated to different groups or treatments. There was no control group used in this study as there was no attempt by the researcher to control for extraneous variables (Rosnow & Rosenthal, 1996). Therefore, a non experimental design was used in this research (Rosnow & Rosenthal, 1996).

This form of research design is descriptive in nature and does not involve using experimentation to get information, but rather through observation and description of phenomena. It is considered to be quantitative because the results obtained from the questionnaires are systematically presented in statistical form (Howell, 1997). Since the quantitative data was collected at one point in time, one can hence argue that a correlational

design was also implemented (Rosnow & Rosenthal, 1996). Another method of collecting descriptive data that was used in the present study is the use of interviews. This qualitative part of the research is discussed on page 117.

4.6.3 Sample

There was no random selection; therefore a non probability sample was used (Rosnow & Rosenthal, 1996). Furthermore, the sample was chosen for convenience, as participants were selected based on the ease of accessing them (Howell, 1997), hence a non probability convenience sample was selected for the present study. The sample consisted of first year university students studying psychology at the University of the Witwatersrand collected in 2005. There were 183 students (N = 183) that participated in this study. From the 183 students, 3 students participated in a semi structured interview. A summary description of the sample with regards to the age, gender, race and socio-economic class is provided in Table 2 on page 105.

4.6.4 Instruments

As already mentioned, a questionnaire method and interview schedule was adopted for the present study. The questionnaire method included a cover letter, demographic section, the 16 Personality Factor Inventory (16PF), the Eating Attitudes Tests (EAT-26) and the

Eating Disorders Inventory (EDI)[10]. Furthermore, the interview schedule was prepared using open-ended questions[11]. The interviews were carried out with those individuals identified from the questionnaire with potential eating dysfunction.[12]

[10] See Appendix D for a copy of the questionnaire pack containing the demographic section, the 16 PF, EAT-26 and EDI
[11] See Appendix E for a copy of the interview schedule.
[12] See Appendix E for a copy of the interview transcripts carried out with D09, E13 and C.

Table 2: Descriptive statistics of the sample

Variable		**Frequency**	**%**	**Cumulative %**	**N**
Age	17	12.	6.8	6.8	176
	18	112.	63.6	70.5	
	19	13.	7.4	77.8	
	20	5.	2.8	80.7	
	21	5.	2.8	83.5	
	22	12.	6.8	90.3	
	23	5.	2.8	93.2	
	26	4.	2.3	95.5	
	27	2.	1.1	96.6	
	28	3.	1.7	98.3	
	29	2.	1.1	99.4	
	36	1.	0.6	100.0	
Gender	Male	42.	23.3	23.3	180
	Female	138.	76.7	100.0	
Race	Black	59.	33.1	33.1	178
	White	81.	45.5	78.7	
	Asian	38.	21.3	100.0	
Socio-economic class - Father's	Professional	57	33.3	33.9	171
	Managerial	47	27.4	60.8	
	Supervisor	36	21.0	81.8	
	High grade Supervisor	2	1.17	83.0	
	Lower grade routine grade	1	0.5	83.6	
	Unemployed	11	6.4	90.0	
	Deceased	9	5.2	95.3	
	Pension/grants	8	4.6	100.0	
Socio-economic class – Mother's	Professional	34	19.4	19.4	175
	Managerial	41.	23.4	42.9	
	Supervisor	44.	25.1	68.0	
	High grade Supervisor	7.	4.0	72.0	
	Lower grade routine grade	4.	2.3	74.3	
	Unemployed	5.	2.9	77.1	
	Deceased	5.	2.9	80.0	
	Housewife	32.	18.3	98.3	
	Pension/grants	3.	1.7	100.0	

The Missing values noted are due to participant's not recording their demographic status

4.6.4.1 Demographics

The demographic section of the questionnaire sought information on the age of the participants, gender and race, (categories included were African, White and Asian) and parental occupation. The Hall Jones Scale of Occupational Prestige categorised the responses according to the parents occupation. This measure grades occupations according to their prestige (Rose & Pevalin, 2001). One of the advantages of this scale is its ability to distinguish different ranks of non-manual occupations. Although the categories are based on male British occupations it has been found to apply to females and to the South African context (Rose & Pevalin, 2001; Silva, 2002). Class one deals with the professionally qualified and high administration workers, class two includes managerial and executive workers, class three, the supervisors and non-manual higher grade workers, class four is essentially the same as class three except that these are lower grade workers and finally class five is concerned with non-manual work (Silva, 2002). This research utilised the additional class six, which related to the unemployed, class seven related to the deceased and eight referred to housewives which was introduced by Silva (2002). Furthermore, this research included an additional category, nine, which refers to government pensions and grants as the Hall Jones Scale of Occupational Prestige did not cater for this class.

4.6.4.2 The Eating Attitude Test (EAT-26)

The Eating Attitudes Test (EAT-26) is a standardized measure of the symptoms that are characteristic of eating disorders. It was developed by Garner & Garfinkel (1979) and

measures disturbances in eating attitudes and behaviours. This measure assesses a broad range of symptoms and provides a total score for disturbed eating attitudes and behaviours. Therefore, for the purpose of this research, this measure accounted for dysfunctional eating and behaviours that are reflected of eating pathology. In most situations the EAT-26 is used as a screening instrument for the early identification of an eating disorder.

The EAT-26 is a shortened version of the EAT-40, it has a correlation of $\underline{r} = 0.97$ with the EAT-40 (Garner, Olmsted, Bohr & Garfinkel, 1982; Williamson, Anderson, Jackman & Jackson, 1995). It is a self-report measure, which has three subscales. Each of the items is answered in terms of a 6 point Likert scale and items are scored 3 points for extreme eating disorder responses, 2 points for the next alternative and 0 points for the remaining three choices. High scores on the EAT-26 (above 20) indicate eating disorders but not necessarily a diagnosis (Garner et al., 1982). It takes about 10 minutes to complete and in the present study most participants completed the EAT-26 in less than 10 minutes.

Subscale one relates to dieting and involves instances of avoiding fattening foods and a preoccupation with thinness. It consists of the following 13 items: 4, 9, 10, 14, 15, 22, 25, 29, 30, 36, 37, 38 and 39. Subscale two is related to bulimia and food preoccupation which reproduces thoughts of food as well as instances of bulimia nervosa. Items in this subscale are reflected in numbers 6, 7, 13, 31, 34 and 40. Subscale three refers to Oral Control and relates to self control with regard to eating and the perceived pressure from others to gain weight. It comprises of 17 items, namely, items 5, 8, 12, 24, 26, 32 and 33 (Garner &

Garfinkel, 1979). The total score of the EAT-26 was used as a screening for individuals with potential eating disorders.

The internal reliability for an American anorexia nervosa sample was 0.90 (Garner et al, 1982) while the internal reliability for a South African sample was 0.62 (Senekel et al., 2001). Furthermore a study done by Szabo and Allwood (2004) using a Zulu version of the EAT-26 revealed an internal reliability coefficient of 0.61. In addition, a South African study yielded cronbach alpha coefficients for each of the three subscales of the EAT-26. The dieting, food and oral subscale yielded coefficients of α =0.75, α = 0.75 and α = 0.72, respectively (Silva, 2002). Concerning validity, the EAT-26 has been found to be moderately correlated with the Bulimia test ($\underline{r}$ = 0.67) and the Eating Questionnaire ($\underline{r}$ = 0.59) (Garner & Garfinkel, 1979). Van Tonda (2004) calculated the EAT-26 coefficient of $\underline{r}$ = 0,833 which indicates a high internal consistency of measure. Thus, there is support that the EAT-26 can be used with confidence within a South African sample. In addition, Delport (2005) presented the coefficients for the various subscales of the EAT-26, r = 1.97 (dieting subscale), $\underline{r}$ = 0.58 (food preoccupation subscale) and $\underline{r}$ = 2.36 (oral).

4.6.4.3 The Eating Disorder Inventory (EDI)

The Eating Disorder Inventory (EDI) is a multi-scale instrument that provides an overall summary of the psychological and behavioural traits of eating pathology. It works to assess attitudes towards eating and body. Furthermore, it focuses on the psychological problems associated with an eating disorder. It is however, insufficient in making a firm

diagnosis of an eating disorder but it is valuable tool in the screening process where high scores determine individuals susceptible to developing an eating disorder (Garner et al., 1982). High scores suggest a prognosis for an eating disorder (Garner, Olmsted & Polivy, 1983). Therefore, the higher the score of the EDI, the greater the severity of the eating pathology. The EDI has further been used as an outcome measurement and as a measurement of symptom evolution and development during treatment (Milos, Spindler & Schnyder, 2004). Therefore, the EDI was used in the present study to determine instances of eating pathology in participants and to invite these participants to engage in an in-depth interview.

The EDI is a self-report questionnaire containing 64 items that takes approximately 20 minutes to administer. It uses a 6-point likert scale response set to assess the behavioural and psychological traits common to eating disorders (Garner et al., 1983). The response scale ranges from always never to always. The extreme score always earns a scoring of three, the score immediately beside receives a scoring of two and then the next a scoring of one. The three choices that are clearly opposite to the extreme score receive a score of 0. Items 1, 12, 15, 17, 19, 20, 22, 23, 26, 30, 31, 39, 50, 55, 58 and 62 are reverse scored (Garner et al., 1983).

The EDI is divided up into eight subscales, three of them (Drive for thinness, Bulimia and Body dissatisfaction) were intended to measure and assess behaviour and attitudes towards weight, body shape and eating (Garner et al, 1983). The remaining five subscales are

responsible for measuring general psychological traits of individual's with eating disorders. What follows is a discussion of the eight subscales.

1. Drive for Thinness. This scale identifies individuals with excessive anxiety over dieting, preoccupation with weight and an intense pursuit of thinness. The items reflect an intense fear to gain weight as well as a deep desire to loose weight (Garner et al., 1983). The subscale is made up of items 1, 7, 11, 16, 25, 32, 49.

2. Body dissatisfaction subscale. This subscale measures the general frustration with the shape and size of certain body regions, such as stomach, hips, thighs, buttocks. Items that make up this scale are 2, 9, 12, 19, 31, 45, 55, 59 and 62 (Garner et al., 1983). This subscale was utilised by the present study to measure body dissatisfaction.

3. Bulimia subscale. This is a measure of binge eating followed by purging techniques to rid oneself of the food eaten during the binge. Items that make up this subscale are 4, 5, 28, 38, 46, 53 and 61 (Garner et al., 1983).

4. Ineffectiveness subscale. This subscale measures feelings of inadequacy, insecurity, worthlessness and not being able to manage one's own life. The subscale is made up of items, 10, 18, 20, 24, 27, 37, 41, 42, 50 and 56 (Garner et al., 1983).

5. Perfectionism. This measure assesses an individual's expectation for personal achievement. The items that reflect this subscale are 13, 29, 36, 43, 52 and 63 (Garner et al., 1983).

6. Maturity Fears. This subscale is concerned with measuring one's desire to revert back to a preadolescent state due to the overwhelming demands of adulthood (Garner et al., 1983). The subscale is made up the following items 3, 6, 14, 22, 35, 39, 48 and 58.

7. Interpersonal Distrust. This measures suspiciousness and a reluctance to form close relationships with others. It also measures the inability to communicate feelings and emotions towards others. The items concerned with this construct are 15, 17, 23, 30, 34, 54 and 57 (Garner et al., 1983).

8. Interoceptive Awareness. This measures one's lack of confidence and assurance in pinpointing sensations of hunger and satiety. The items concerned with this subscale are 3, 6, 14, 22, 39, 48 and 58 (Garner et al., 1983).

In recent studies there has been a lot of controversy surrounding the effectiveness of the EDI and its subscales in measuring non clinical and community samples (Freeman & Szabo, 2005; Schoemaker, van Strien & van der Staak, 1994; Welch, Hall & Walkey, 1988). However, a recent study by Wicks, Siegert and Walkey (2004) demonstrated that the EDI including all eight subscales as well as the full scale is a reliable and useful instrument with community or non-clinical samples. This study suggests that the EDI is a

suitable measure for a non-clinical sample and this is relevant for the present study as the sample consisted of a non-clinical group (university students). The present research is interested in measuring body perceptions and individuals inclined to develop binge eating disorder. The subscales that proved of vital importance to this study were the total EDI scores and the body dissatisfaction subscale as these items serve the interest of the research.

The widely used EDI-2 has been revised and the development of the EDI-3 provides objective scores and profiles that are useful in treating individuals with confirmed or suspected eating disorders (Garner, 2002). The EDI-3 maintains the item set from the original EDI; however it has incorporated an additional six new scales. These include, eating disorders, affective problems, risk ineffectiveness, over control, interpersonal problems and general psychological maladjustment. The EDI-3 can be utilized in the diagnosis of, anorexia nervosa-restricting type; anorexia nervosa-binge-eating/purging type; bulimia nervosa; and eating disorders not otherwise specified disorder (Garner, 2002). The EDI-2 and the EDI-3 was not used in this research as the EDI-2 could not be acquired and the EDI-3 had new factors added that were not directly linked to the present study.

The coefficient alphas of international studies for the EDI subscales range from 0.69 to 0.9 (Shore & Porter, 1990). Test retest reliabilities ranged from $\underline{r} = 0.81$ to $\underline{r} = 0.97$, for a one week period, the reliabilities were above $\underline{r} = 0.80$ for the Interoceptive Awareness subscale (Ware & Pratz, 1987; Williamson et al, 1995). A South African study done by Silva (2002) calculated the Cronbach alpha coefficients for the subscales of the EDI. According to the findings, the reliability coefficients for the subscales ranged from 0.74 to 0.78. Similarly, a

South African study done by van Tonda (2004) calculated reasonably high internal consistency measures for the bulimia subscale of $\underline{r} = 0.69$, drive for thinness of $\underline{r} = 0.82$ and body dissatisfaction scale of $\underline{r} = 0.87$. The information obtained from these subscales can support the confidence of using the EDI within a South African sample.

Considering that the sample comprised of both males and females, it is necessary to relate that the EDI and EAT-26 are not satisfactorily designed to measure eating disorders in men. The measures have been validated only on women. Some of the items in the questionnaires relate specifically to women and do not cater for men (for example, one question asked whether the participants have regular menstrual cycle). The reliability and norm tables have focused primary on females. Therefore, it is necessary to assert that the measures are less reliable for men than they are for women. However, a study done by Delport (2005)[13] using the EDI on male participants revealed scores for the subscales that ranged from 1.82 to 6.84, which supports the claim that males have generally lower score, specifically on the drive for thinness, bulimia and body dissatisfaction scales (Cantrell & Ellis, 1991; Delport, 2005).

In the present study the EAT-26 and the EDI measures were used on male participants because these measures are perceived as the best measure for the conceptualisation of general eating related pathology (Anderson et al., 2004). In addition, norm scores are available on the EAT-26 for male participants and the EDI is one of the most frequently used self report assessment measures for both males and females. However, considering that the validation of the EAT -26 and EDI as methods of diagnosing males with eating

[13] For a further investigation of Delport (2005) alpha means, refer to page of the Discussion chapter

disorders are subject to bias (Freeman & Szabo, 2005) it is suggested that this could be an area for further research as there is an increasing awareness of males with eating disorders and a measure that has been validated on males is necessary to ensure the reliability of results (Freeman & Szabo, 2005).

4.6.4.4 The 16 Personality Factor Inventory (16PF)

The 16 Personality Factor Inventory (16PF) was designed by Raymond B. Cattell as a general assessment of personality. Since its development, the popularity of the 16PF has been universal with many different countries and cultures supporting the validity of the instrument (Prinsloo, 1995). This research utilised the South African version of the 16PF which adheres strictly to the original Cattellian instrument. The instrument has been standardised on various subgroups and is a useful assessment tool in counselling, clinical and secular environments (Prinsloo, 1995).

The 16PF is a 187-item (multiple-choice format) test. The questionnaire provides detailed information on personality traits placing emphasis on an individual's strengths through measurement of dimensions such as warmth, intelligence, sensitivity, and self-discipline. The primary aim of the 16PF is to use a set of items to compile personality descriptions and to predict the behaviour of the participant taking the test based on their responses to the items in the questionnaire (Prinsloo, 1995). It takes approximately 45-60 minutes to complete and it can be administered to groups or to an individual (Cattell et al., 1970). In the present study, the participants completed this measure within a 45 minutes time frame.

The 16PF is considered one of the first objective measures of personality and is comprised of 16 primary factor scales and five global factor scales. Therefore, the inventory provides a hierarchical system of personality measurement.

The applications for the 16PF include assessment of leadership, creativity, interpersonal skills and an assortment of occupational profiles. Despite these varied applications, the inventory remains true to its original mission: to measure comprehensively the basic factors underlying "normal" personality (Heffner, 2002). The 16 traits as reflected by Cattell et al. (1970) are reflected below.

1. Warmth (Reserved versus Warm; Factor A)
2. Reasoning (Concrete versus Abstract; Factor B)
3. Emotional Stability (Reactive versus. Emotionally Stable; Factor C)
4. Dominance (Deferential versus Dominant; Factor E)
5. Liveliness (Serious versus Lively; Factor F)
6. Rule-Consciousness (Expedient versus Rule-Conscious; Factor G)
7. Social Boldness (Shy versus Socially Bold; Factor H)
8. Sensitivity (Utilitarian versus Sensitive; Factor I)
9. Vigilance (Trusting versus Vigilant; Factor L)
10. Abstractedness (Grounded versus Abstracted; Factor M)
11. Privateness (Forthright versus Private; Factor N)
12. Apprehension (Self-Assured versus Apprehensive; Factor O)
13. Openness to Change (Traditional versus Open to Change; Factor Q1)

14. Self-Reliance (Group-Oriented versus Self-Reliant; Factor Q2)

15. Perfectionism (Tolerates Disorder versus Perfectionistic; Factor Q3)

16. Tension (Relaxed versus Tense; Factor Q4)

The test-retest reliability for the trait items ranged from 0.55 to 0.74 (Prinsloo, 1995). In general these results are relatively satisfactory and it is accepted that the South African version of the 16PF will reveal more or less the same psychometric characteristics as far as reliability is concerned (Prinsloo, 1995). With regards to the validity, numerous examinations revealed significant results (Cattell et al., 1970). For instance, correlation coefficients fall below a 0.80 magnitude in only two instances, 0.63 for Shrewdness and 0.74 for Imagination. The conclusion therefore is that the 16PF measures the same construct in a reliable, valid and unbiased fashion and is an appropriate assessment of personality (Prinsloo, 1995).

Therefore, the 16PF has been widely used in academic and research avenues and considering that it has been adapted to the South African environment, it was reasonable to adopt the 16PF for the present research. All the 16 personality factors were considered important because the overall aim of the research is to investigate personality traits in individual's inclined to develop eating pathology (Prinsloo, 1995).

4.6.4.5 Interview schedule

This study used the suggestions provided by Waller (2001) to construct a semi structured interview schedule to determine the nature, description and aetiology of eating pathology. Waller (2001) suggests that the items included in the interview schedule should reflect the DSM IV-TR (2000) classification of eating disorders. For example, asking about eating habits and relating the responses to the DSM IV-TR (2000) description of eating disorders was applicable in pinpointing the level of eating pathology. However, it is apparent that construction of an equitable interview schedule takes considerable time and skill. A limitation of the current interview schedule was that it was not piloted, therefore the process of checking the reliability and validity of the items could not be substantiated. However, the study relied heavily on the quantitative data and merely used the qualitative information to support the findings of the quantitative data.

Therefore, by developing open ended questions around the suggestion of Waller (2001), items related to perceptions of eating pathology, method of weight control, attitudes about shape, weight and eating habits (items 1-7) were considered during the interview process. Furthermore, in order to allow for the exploration of added information (personality), additional interview items (questions 8-9) were added to address this issue in greater detail. Overall, the items in the questionnaire maintained the complexity of responses and catered for varied responses among respondents.

The primary reason for using a semi structured interview in this research is that it is flexible enough to allow the interviewer to explore complex issues that were not determined by a limited set of responses (Carey, Oxtoby, Nguyen, Huynh, Morgan & Jeffery, 1997). The researcher worked with a schedule of questions that served as a guide. During the interviews, the ordering of the question was less important. Interest was primary focused on the topic and what the participant chose to talk about (Smith, 1995). Due to the flexibility of the interviews, the researcher probed interesting points related to eating habits and beliefs and focused on the main concerns of the interviewees (Kvale, 1996). The primary advantage was that the participant was able to enlighten the researcher about personal experiences and produce rich source of data on their eating dysfunction (Bauman & Adair, 1992; Smith, 2003).

The interviews were carried out with three participants on three separate occasions at the University of the Witwatersrand, Johannesburg. The duration of the interviews was approximately 60 minutes. All three participants presented with instances of eating pathology. The instruments used in this study have been presented above. The manner of carrying out the research and the statistical analysis used will set the scene for the second part of this chapter. Therefore, what follows is a systematic discussion of the procedures, ethical considerations and data analysis that was considered for this research.

4.7 Procedure

In order to carry out the study during lecture time, permission was obtained from lecturers and course coordinators of the psychology one course. The study took place at the University of the Witwatersrand, Johannesburg. Approximately 60 minute were used to administer the questionnaires. The study was conducted during the month of March and April 2005. Students were approached during their psychology lecture and information concerning the study was provided to them. The researcher informed students of the ethical issues and emphasised that participation was completely voluntary. Confidentiality along with anonymity was assured since no identifiable data appeared on the questionnaire and only the researcher and researcher's supervisor had access to the information.

Those that agreed to participate in the research were asked to remain in class and the questionnaires in the form of questionnaire packs were distributed. Those that did not want to participate were free to leave. The researcher informed the class that the present study involved two parts, filling out questionnaires and calling on a select few to participate in individual interviews. Students were asked to leave their completed questionnaires in a box that was placed at the front of the class.

The information sheet[14] which was included in the questionnaire pack informed the participants that some of them would be called upon to participate in an interview on binge eating and personality. Information sheets and consent letters were separately issued for

[14] See Appendix F for a copy of the information sheet for the questionnaires and interviews

the questionnaires and interviews. The interviews involved using open-ended questions which was carried out with those individuals identified with eating pathology. All subjects were asked to sign separate consent letters[15] for the questionnaires and interviews.

Each questionnaire pack contained a detachable card with a specific code written on them. Students were asked to detach the card and keep it in a safe place. The card with the specific code written on them was the means of identifying those individuals who were called upon to participate in the interviews. After analysing the quantitative data, it became apparent that there were approximately thirty individuals who scored really high on the EAT-26 (20 and above) and EDI (80 and above) which implied that these individuals were more vulnerable to developing eating related pathologies.

The researcher invited these participants (by matching their codes) to participant in the interview process. The information obtained during the interviews were recorded by the researcher and later transcribed onto a word document. Furthermore, a separate consent letter[16] was issued for permission to tape record the interviews. At times, the participants opted to have the recorder turned off as they felt uncomfortable relating personal information about themselves and incidences of eating dysfunction. The researcher respected the wishes of the participants and decided at those times to manually write down the information that was said.

[15] See Appendix G for a copy of the consent letters for the questionnaires and interviews
[16] See Appendix G for a copy of the consent letters for tape recording.

4.8 Ethical Consideration

Ethical clearance[17] was obtained from the University of the Witwatersrand ethics committee to carry out this research. During the process of data collection, it was stressed both orally and in written form that participation in the study was completely voluntary. Participants were given consent letters in class and this were collected separately. Furthermore, participants who agreed to participate in the interviews were given two consent letters in order to sign. Confidentiality and anonymity was assured as no identifiable information appeared on the questionnaire. Only the researcher and the researcher's supervisor had access to the questionnaires. Upon completion of the questionnaires, students were thanked for their participation. The particulars of the researcher and the researcher's supervisor were provided, should the participants require any further information concerning the study. The contact details of the nearest help centres were provided on the cover letter, should the participants feel in any way distressed or anxious upon completion of the questionnaires. Upon analysis of the data, all the necessary recordings and raw data were destroyed. In addition, during the interview process anonymity was assured as no identifiable information was asked during the interviews. It was made clear that the participant were referred to by the code that they were provided earlier on in the study.

[17] See Appendix H for a copy of the Ethics clearance form.

4.9 Data Analysis

4.9.1 Statistical analysis

The statistical package (SAS-version 8) was used to analyse the quantitative data obtained during class time. The various statistical procedures that were run included Chronbach alpha coefficients, Pearson's and Spearman's correlations, forward stepwise multiple regression, analysis of variance (ANOVA's) and the Levene's test for Homogeneity of Variance. In addition, the qualitative analysis was interpreted using thematic content analysis to isolate themes and categories that were relevant for the present research.

4.9.1.1 Descriptive statistics

The fundamental objective of descriptive statistics[18] was to summarise and describe the basic patterns of the data and the measures in a clear and understandable way (Rosnow & Rosenthal, 1996). By the use of tables and the presentation of histograms the overall structure of the sample was compiled. When the demographic variables were considered, it was necessary to obtain the frequencies for the nominal data (socio-economic class, gender and race) and the interval data (age).

[18] See table 2 on page 109 for a summary of the descriptive statistics.

This was essential as the means, standard deviation, frequencies and ranges helped to describe the data and determine their distributions. In addition, descriptive statistics in the form of the mean, standard deviation and modes was obtained for the interval variables of the EAT-26, EDI and the 16PF. These procedures were necessary to determine whether the data were normally distributed. The histograms of the variables that were not normally distributed are presented in the Appendix J.

In addition, Chronbach alpha coefficients of the instruments were obtained in order to ascertain the internal reliability coefficients. This was important as the internal reliability determines the stability of the instrument in measuring the same construct (Rosnow & Rosenthal, 1996).

4.9.1.2 Relationship using correlation coefficients

Correlation coefficient is a measure of the relationship between two or more variables. The measurement scales used should be at least interval scale. A correlation is high if it can be summarized by a straight line (Rosnow & Rosenthal, 1996). This research employed Pearson's product - moment correlation coefficients to determine whether personality traits were related to the total scores of the EAT-26 and the EDI. Furthermore, correlations were run for the body dissatisfaction subscales of the EDI and the total EAT-26 as well as the total score obtained. Furthermore, correlations were performed on gender with the total EAT-26 and EDI scores. Considering that the variable age was not normally distributed,

the use of the non parametric equivalent test (Spearman's correlation) was used to determine the relationship between age and the total score of the EAT-26 and the EDI.

4.9.1.3 Relationships using stepwise multiple regression

Multiple regression is important in establishing whether a set of independent variables determines the amount of the variance in a dependent variable at a significant level (Howell, 1997). Thus, determining the relationship between the independent variables (personality factors of the 16PF) and eating pathology as measured by the EAT-26 and the EDI was the fundamental purpose of multiple regression in this investigation. In essence, multiple regression tackles the primary question of what is the best predictor of eating related pathology (Howell, 1997).

In this research a forward stepwise multiple regression was run as it is widely used in the exploratory phase of research and for the purposes of prediction, In this process, one starts out with no predictors in the model. Each available predictor is evaluated with respect to how much strength that the predictor would be adding it to the model. All the linear regression models are considered in order to determine the best regression equation (Howell, 1997).

4.9.1.4 Exploring differences using Analysis of Variance (ANOVA)

Analysis of variance (ANOVA) is a statistical method often regarded as a univarite technique that test for a difference between two or more means by comparing the variances within groups and the variances between groups. One way ANOVA deals with one independent variable and one dependant variable and measures whether the independent variable has an effect on the dependant variable (Howell, 1997). This study employed analysis of variance to test for significant difference between certain demographic variables (race and socio-economic status of mother and father) and the propensity to develop eating pathology as measured by the total scores of the EAT-26 and the EDI, respectively. The primary assumption of an ANOVA is that there is homogeneity of variance (Howell, 1997). Therefore the Levene's test for Homogeneity of Variance was performed and all the variables met the assumption of normality.

4.9.2 Thematic content analysis

Content analysis is the tool that was used to analyse the qualitative data (interviews) within the present study. The researcher searched out the underlying themes and related ideas from the interview material in order to categorise the most salient information into distinct units (Neuman, 1997).

Content analysis refers to a bundle of techniques that are used for systematic text analysis. The basic premise of this method is for the material to fit into a model of communication

(Mayring, 2000). Content analysis has been defined as a systematic technique for compressing many words of texts into fewer content categories based on precise rules of coding (Krippendorff, 1980; Stemler, 2001). The central idea is that texts are reduced to categories consisting of words, phrases and sets of words. It thereafter enables researchers to make inferences from these categories which can then be collaborated by other methods of analysis (Stemler, 2001). Specific words or patterns are indicative of the research question and hence, certain assumptions can be made based on the analysis. The reliance on categorisations and coding makes content analysis a rich and meaningful technique in analysing data.

Content analysis has positive benefits of being unobtrusive and useful in dealing with large volumes of data. Common criticisms against content analysis are the apparent use of faulty definitions to distinguish categories and the representation of non-mutually exclusive categories as separate, distinct classes (Stemler, 2001). In order to systematically analyse the data and draw certain conclusions, the researcher focused on three fundamental steps, namely, data reduction through the use of coding; data display and conclusion drawing in the qualitative analysis process (Krippendorff, 1980; Miles & Huberman, 1994). Data reduction is the first step in the process of selecting, focussing, simplifying, abstracting and transforming the data that appear in the transcripts into an organised and systematic discussion that is relevant to the discussion (Miles & Huberman, 1994).

Prior to the actual analysis, the researcher engaged in anticipatory data reduction where decisions were made concerning the conceptual framework, research questions and data

collection approaches for the study. As the data was collected, the researcher performed additional data reduction such as writing summaries, coding, creating themes, developing categories and partitions (Miles & Huberman, 1994). The process of reducing the data is necessary as it assist the researcher to organise information in such a manner that conclusions can be drawn.

A fundamental technique developed during the reduction process is coding (Krippendorff, 1980; Stemler, 2001). Coding is very significant to the research process and can be defined as 'tags or labels' for providing meaning to the descriptive information that was collected during the study (Miles & Huberman, 1994, p, 56). They are attached to data such as words, phrases, sentences or paragraphs and relate to one another in a growing and coherent structure. Open coding was part of the present analysis where the researcher established themes and labels in order to reduce the data. The themes were produced from the initial research questions and theories from the literature (Krippendorff, 1980; Miles & Huberman, 1994).

This process develops into axial coding where the focus was more on the coded themes than on the data where the themes were organised into an alignment of key concepts (Neuman, 1997). The primary task of axial coding is to re-examine the initial codes and if any additional codes re-surface then the researcher should include them (Miles & Huberman, 1994). Finally, selective coding was used where the researcher searched for themes and made comparisons and distinctions. The process of compiling and writing up these codes into a meaningful analysis is the work of analytic memo writing. These memos

are personal, methodological written works that contains the researcher's reflections and thoughts on the various categories and themes developed during the coding process (Neuman, 1997; Miles & Huberman, 1994).

The development of data display is the process of drawing conclusions from the data that was compiled during the reduction process (Neuman, 1997). Displays were important as they helped the researcher to sort out and understand the information that has been gathered or whether further analysis is necessary. It is proposed that more organised displays are a major source of valid qualitative analysis (Miles & Huberman, 1994). Finally, the research tabulated the conclusions based on the meaning attached to the analysed data. For instance, certain patterns were identified, regularities were noted and explanations were given (Miles & Huberman, 1994).

In this study the researcher integrated the various methods (reduction, coding, data display and written conclusions) of qualitative analysis and tabulated the formulated themes and categories into relevant information for the discussion on eating pathology. For a full summary of the themes (descriptions and statistics), refer to Tables I1 and I2 in Appendix I.

This chapter has presented the various methods that were employed in order to investigate the relationship between personality and body perceptions in the development of eating pathology. Therefore the implementation of the methods has yielded results and the presentation of these has been discussed in the following chapter 5.

Chapter 5: Results

5.1 Introduction

This chapter will present the results obtained from the statistical analysis as guided by the various research questions posited in the previous chapter. Furthermore, this research will present the analysis of the data from interviews where content analysis was employed to formulate relevant themes and categories on binge eating disorder.

The chapter will begin with a detailed summary of the data in the form of descriptive statistics where tables will be provided of the demographic variables and the three instruments used in this study. Internal reliability as measured by Chronbach alpha will be provided for the EAT-26 and the EDI, respectively.

The next section will relate whether personality traits as measured by the personality questionnaire (16PF) have any relationship with the two eating disorder questionnaires used i.e. the EAT-26 and EDI, respectively. The predicted relationship between the personality factors in conjunction with regards to the two eating disorder instruments respectively will be examined using multiple regressions. In addition, the relationship between two of the demographic variables (age and gender) and the eating disorder questionnaires will be investigated. Furthermore, the relevant subscales and the two respective eating disorder instruments will be explored to determine a relationship. Significant differences will be considered between demographic variables (race and socio-economic class) and the eating

disorder instruments by means of ANOVA. Additionally, the results obtained from the content analysis will be presented in a tabulation of the themes and issues raised. This process is essential as the researcher will be able to determine the meaning and relationship of words and phrases and then make inferences about the messages within the interviews.

The following table represents the meanings of the abbreviated words that were used for the factors under investigation. This is useful as it provides a means of identifying the various factors in the analysis process.

Key to abbreviations used in the tables

16 Personality factor questionnaire (16PF)		
A = Reserved – Warm	B = Concrete – Abstract	C = Reactive - Emotionally Stable
E = Deferential – Dominant	F = Serious – Lively	G = Expedient – rule conscious
H = Shy – Socially Bold	I = Utilitarian – Sensitive	L = Trusting – Vigilant
M = Grounded – Abstracted	N = Forthright – Private	O = Self-Assured –Apprehensive
Q1 = Traditional – Open to Change	Q2 = Group-Oriented – Self-Reliant	Q3 = Tolerates – Perfection
Q4 = Relaxed – Tense		
MOCUP = Mother's socio-economic status	FOCUP =Father's socio-economic status	CA = Cronbach Alpha
TOTEAT-26 = Total score of the EAT-26		
DIETING = Dieting subscale	FOOD = Food Preoccupation scale	ORAL = Oral Control subscale
TOTEDI = Total score of the EDI		
Drive = Drive for Thinness subscale	Bulimia = Bulimia subscale	Body = Body Dissatisfaction scale
Ineffect = Ineffectiveness scale	Perfect = Perfectionism subscale	Distrust = Interpersonal Distrust scale
Aware = Interoceptive Awareness subscale	Maturity = Maturity Fears subscale	
Values in italics indicate significance at p < .001 **Values in bold indicate significance at p < .05**		

5.2 Descriptive Statistics

The following discussion will present an overview and summary of the sample that was used for the present study. The data will be presented in the form of tables and clear descriptions will be presented.

5.2.1 Demographic variables

According to the summary statistics as presented in Table 1 of the methods chapter, the age of the sample ranged from 17 to 36 with a mean age of 19 and the standard deviation was 2.8. It appears that most of the participants in the sample were between the ages of 17 and 19 years of age. It seems that the variable age was not normally distributed therefore a non parametric test was used (Spearman's correlation) in order to investigate whether age was related to binge eating disorder.

The sample comprised of both males and female students, however there were more females that participated in the research than males (N = 138). The majority of the sample comprised of Caucasian participants (N= 89), followed by Black participants (African and Coloured) (N = 59) and Asian (Indian and Asian) (N = 38). In all instances the distributions were normal therefore parametric tests were used.

With regards to the socio-economic classes, most students had fathers in the professional position (N = 56). From the analysis it can be seen that some of the sample reported fathers

who were unemployed (N = 11) and pensioners, living off disability and grants (N = 9). These figures were fairly high in comparison to fathers who had lower grade supervisory jobs (N = 2) and routine grade jobs (N = 1). Furthermore, the sample reported that most mother's were in the supervisory position (N = 44). The socioeconomic classes of the mothers were also in the relatively higher socio-economic class with most mothers in the professional (N = 34) and managerial position (N = 41). In addition, there was a high value for mothers who were housewives (N = 32). The socio-economic class for mothers with the least amount of individuals were mothers who received pensions and grants (N = 3).

5.2.1.1 The Eating Attitude Test-26

Table 3 Descriptive statistics of the EAT-26

Scale	**N**	**Range**	**Min**	**Max**	**Mean**	**Mode**	**Standard Deviation**
Dieting	183.00	32.00	0.00	32.00	5.10	0.00	6.92
Food	183.00	13.00	0.00	13.00	1.51	0.00	2.71
Oral	183.00	13.00	0.00	13.00	1.93	0.00	2.74
TOTEAT	183.00	75.00	0.00	75.00	13.89	8.00	14.11

The number of legitimate responses obtained from the EAT-26 was 183. The range, mean, standard deviation and mode of each of the subscales and the total score are provided in Table 3. From examining the histograms and from the examples above, it can be determined that the scores were skewed to the left which indicates that most of the scores were low on each of the subscales and the total EAT-26. Additionally, the scores on the EAT-26 totals were mostly low indicating that most participants did not present instances of disordered

eating. The EAT-26 total is relevant to the investigation as it measures students with eating dysfunction.

5.2.1.2 The Eating disorder inventory

Table 4 Descriptive Statistics of the EDI

Scale	N	Range	Min	Max	Mean	Mode	Standard Deviation
Drive	183.00	21.00	0.00	20.00	4.09	0.00	5.57
Bulimia	183.00	15.00	0.00	15.00	1.95	0.00	2.89
Body	183.00	27.00	0.00	27.00	8.19	0.00	7.40
Ineffect	183.00	21.00	0.00	21.00	5.33	5.00	3.68
Perfect	183.00	17.00	0.00	17.00	5.78	4.00	4.18
Distrust	183.00	15.00	0.00	15.00	3.80	2.00	2.82
Aware	183.00	22.00	0.00	22.00	4.34	0.00	4.88
Maturity	183.00	19.00	0.00	19.00	4.51	2.00	4.13
TOTEDI	183.00	116.00	1.00	114.00	37.92	18.00	25.26

There were 183 responses obtained from the EDI. The range, mean, standard deviation and mode of each of the subscales and the total score are provided in the table above (Table 4). From the table and the histograms, it was deduced that the subscales along with the EDI totals are not in line with a normal distribution. The distributions were skewed to the left, indicating that there were more low scores on these subscales.

5.2.1.3 The 16 Personality Factor Inventory (16PF)

Table 5 Descriptive statistics of the 16PF

Scale	N	Range	Min	Max	Mean	Mode	Standard Deviation
Factor A	183.00	8.00	3.00	16.00	9.77	13.00	3.21
Factor B	183.00	9.00	2.00	11.00	5.39	5.00	1.65
Factor C	183.00	18.00	0.00	18.00	8.96	8.00	3.34
Factor E	183.00	17.00	5.00	22.00	12.59	12.00	3.48
Factor F	183.00	14.00	2.00	16.00	9.65	9.00	3.43
Factor G	183.00	18.00	2.00	20.00	9.50	6.00	3.83
Factor H	183.00	16.00	0.00	16.00	7.89	5.00	3.35
Factor I	183.00	17.00	4.00	21.00	13.50	13.00	3.46
Factor L	183.00	19.00	3.00	22.00	12.27	12.00	3.78
factor M	183.00	17.00	5.00	22.00	14.13	17.00	3.65
Factor N	183.00	17.00	5.00	22.00	14.86	17.00	3.78
Factor O	183.00	16.00	2.00	18.00	8.65	8.00	3.26
Factor Q1	183.00	15.00	4.00	19.00	11.32	12.00	3.12
Factor Q2	183.00	18.00	2.00	20.00	10.85	10.00	3.61
FactorQ3	183.00	15.00	2.00	17.00	8.55	7.00	3.56
FactorQ4	183.00	16.00	2.00	18.00	9.56	7.00	3.27

As can be observed from the Table 5, 183 responses were obtained from all 16 factors of the 16 personality factor inventory questionnaire (16PF), scores ranged from 0 to 22. The means ranged from 5.39 to 14.86 and the standard deviation ranged from 1.65 to 3.83. From the analysis and the histograms, it was apparent that all the factors were normally distributed.

5.2.1.4 Internal reliability - Cronbach Alpha Coefficients

Table 6 Cronbach alpha (CA) reliability coefficient for the EAT-26 total and subscales

	EATTOT	**Dieting**	**Food**	**Oral**
CA	0.78	0.84	0.90	0.90

Table 6 reflects the Cronbach alpha reliability coefficient for the EAT-26 total and the subscales of the instrument. The reliability coefficient for each of the items, ranged from 0.78 to 0.90. The higher the alpha the more reliable a test is (Howell, 1998).

5.2.1.5 Internal reliability - Cronbach Alpha Coefficients

Table 7 Cronbach alpha (CA) reliability coefficient for the EDI total and subscales

	TOTEDI	**Drive**	**Bulimia**	**Body**	**Ineffect**	**Perfect**	**Distrust**	**Aware**	**Maturity**
CA	0.84	0.87	0.88	0.87	0.87	0.89	0.89	0.86	0.87

Table 7 reflects the Cronbach alpha (CA) reliability coefficient for the EDI total and the subscales. The reliability coefficients for the scales of the EDI range from 0.84 to 0.89.

5.2.2 The Primary Hypothesis

A. There is a relationship between eating pathology as measured by the EAT-26 and the EDI and specific personality traits as measured by the 16PF.

Table 8 Correlation between the EAT-26 and the 16PF

		A	**B**	**C**	**E**	**F**	**G**	**H**	**I**	**L**	**M**
TOTEAT	**r**	0.04	0.07	-0.08	0.10	-0.01	0.10	0.04	0.13	0.11	0.01
	p	0.58	0.33	0.25	0.15	0.83	0.15	0.58	0.07	0.13	0,81

		N	**O**	**Q1**	**Q2**	**Q3**	**Q4**
TOTEAT	**r**	0,14	**0.33**	-00	0.02	-0.07	**0.28**
	p	0,05	**0.00**	0.95	0.7	0.33	**0.00**

N = 183

Values in bold indicate significance at p < .05 (2-tailed)

There appears to be a significant positive relationship between the EAT-26 and factor O (apprehension-self assured), r = 0.33, p < .05 and factor Q4 (tension-relaxed), r = 0.28, <.05. It appears that individuals who are likely to develop eating pathology present with personality traits such as apprehension, self-doubt, worry, guilt, insecurity and self blame. It also suggests that qualities such as tension, frustration, over-excitability and impatience are associated with the onset of eating pathology. No significant results were obtained between the EAT-26 and the remaining 14 factors of the 16PF.

Table 9 Correlation between the EDI and the 16PF

		A	**B**	**C**	**E**	**F**	**G**	**H**	**I**	**L**	**M**
TOTEDI	**r**	-0.05	0.08	-0.08	0.07	-0.11	0.09	0.00	**0.20**	**0.20**	0.05
	p	0.48	0.27	0.26	0.29	0.11	0.19	0.99	**0.00**	**0.00**	0,49

		N	**O**	**Q1**	**Q2**	**Q3**	**Q4**
TOTEDI	**r**	0,05	**0.41**	-.04	-0.02	-0.08	**0.38**
	p	0,44	**0.00**	0.55	0.69	0.23	**0.00**

N = 183

Values in bold indicate significance at p < .05 (2tailed)

There appears to be a significant positive relationship between the EDI and factor I (sensitive versus tough minded) r = 0.20, p < .05, factor L (suspicious versus accepting), r = 0.20, p < .05, factor O (insecure versus complacent), r = 0.41, p < .05), and factor Q4 (tense versus relaxed and easy going), r = 0.38, p < .05. Therefore, this analysis proposes that individuals who are likely to have eating pathology tend to display personality traits such as sensitivity and tender-mindedness. Furthermore, these individuals tend to be intuitive, suspicious, sceptical, wary and distrustful. In addition, they are prone to feelings of insecurity, apprehension, self-doubt, worry, guilt, tension, high energy, impatience and frustration. No significant relationships were found between the EDI and the remaining 12 factors of the 16PF. Therefore, the hypothesis is accepted that there is a relationship between eating pathology as measured by the EAT-26 and the EDI and specific personality traits as measured by the 16PF.

B. The 16 personality factors (16PF) influence the propensity to develop eating pathology as measured by the EAT-26 in conjunction.

Table 10 Multiple regression using forward stepwise of EAT-26

Predictors	R square	Adjusted R square	Durbin Watson	F	df	p	Beta	Condition Index
(constant)							-6.16	
O	0.11	0.47	1.82	23.4	1	*<.0001*	1.03	15.1

N = 183

Values in italics indicate significance at p < 0.001

There were no outliers in the data and the data was normally distributed. The Durbin Watson indicated that the different observations were independent. The residuals had constant variance. Lastly, multi-colinearity was not a problem as presented by the Condition Indices of 15.1 where values lower that 30 are acceptable (Howell, 1998). Only 11% of the variance is explained by the construct added in the equation. Factor O appears to predict the scores obtained on the EAT-26 and hence the propensity to develop eating pathology to a certain extent. It can be established from Table 10 that the model with the best fit in this instance is:

TOTALEAT = -6.16 + 1.03 O+ Error

Therefore, the hypothesis is accepted, that the 16 personality factors (16PF) influence the propensity to develop eating pathology as measured by the EAT-26 in conjunction

C**.** The 16 personality factors (16PF) influences the propensity to develop eating pathology as measured by the EDI in conjunction

Table 11 Multiple regression using forward stepwise of EDI

Predictors	R square	Adjusted R square	Durbin Watson	F	df	p	Beta	Condition index
(constant)							-3.5	
O	0.17	6.73		37.98	1	**<.0001**	1.93	
Q4	0.21	- 0.20	1.66	9.09	1	**0.002**	1.72	20.3

N = 183

Values in bold indicate significance at p < 0.5

There were no outliers in the data and the data was normally distributed. The Durbin Watson indicated that the different observations were independent. The residuals had constant variance. Furthermore, multi-colinearity did not appear as a problem as presented by the condition indices of 20.3 as values lower than 30 is considered an acceptable level of colinearity (Howell, 1998). Only 21 % of the variance is explained by the construct added in the equation. Factor O and factor Q4 in combination appears to predict the scores obtained on the EDI and hence the propensity to develop eating pathology to a certain extent. From Table 11, it can be established that the models with the best fit is:

TOTALEDI = -3.50 + 1.93 O + 1.72 Q4 + Error

Therefore, the hypothesis is accepted, that the 16 personality factors (16PF) influence the propensity to develop eating pathology as measured by the EDI in conjunction

5.2.3 Secondary Hypothesis

D. There is a relationship between body image disturbance as measured by the Body Dissatisfaction subscale of the EDI and the total EAT-26 and the EDI scores.

Table12 Pearson's Correlation of Body subscale of the EDI and the total EAT-26

		Body Dissatisfaction
TOTEAT-26	r	*0.55*
	p	*0.0001*

N = 183

Values in italics indicate significance at p < 0.001

From the analysis one can determine that there is a significant positive relationship between the Body Dissatisfaction subscale of the EDI and the EAT-26 total ($r = 0.55$, $p < 0.001$). This suggests that participants scoring high on the Body Dissatisfaction subscale of the EDI will also score higher on the EAT-26 total. Participants with an overall dissatisfaction with the shape and size of certain body regions, such as stomach, hips, thighs, buttocks appear to have higher propensity to develop eating pathology as measured by the EAT-26

Table13 Pearson's Correlation of Body subscale of the EDI and the total EAT-26

		Body Dissatisfaction
TOTEDI	r	*0.79*
	p	*0.0001*

N = 183

Values in italics indicate significance level at p < 0.001

There is a significant positive relationship between the Body Dissatisfaction of the EDI and the EDI total (r = 0.79, p < 0.001). This suggests that participants scoring high on the Body Dissatisfaction subscale of the EDI will also score higher on the EDI total. Participants with an overall dissatisfaction with the shape and size of certain body regions, such as stomach, hips, thighs, buttocks appears to have higher propensity to develop eating pathology as measured by the EDI. Therefore, the hypothesis is accepted that there is a relationship between body image disturbance as measured by the Body Dissatisfaction subscale of the EDI and the total EAT-26 and the EDI scores.

E Age is related to the development of eating pathology as measured by the EAT-26 and the EDI.

Table14 Spearman's correlation coefficients between age and the total EAT-26 and the EDI.

		TOTEAT	TOTEDI
Age	P	0.48	0.41
	p	-0.053	-0.06

N = 183

Considering that age was not normally distributed as observed from the histogram in Appendix J, a Spearman's Correlation Coefficient was run. The results indicate that there was no relationship between the age of the participant and the total scores of the EAT-26 and the EDI respectively. Therefore, the hypothesis is rejected.

F. Gender is related to the development of eating pathology as measured by the EAT-26 and the EDI

Table 15 Correlation between gender and the total EAT-26 and the EDI

		TOTEAT	TOTEDI
Gender	r	**0.16**	**0.23**
	p	**0.03**	**0.00**

N = 179

Values in bold indicate significance at p < 0.05 (2-tailed)

There is a significant positive relationship between gender and the total scores of the EAT-26 ($r = 0.16$, $p < 0.05$) and the total score of the EDI ($r = 0.23$, $p < 0.05$). This means that high scores on the EAT-26 and the EDI are related to whether the participant is a male or a female. Based on the raw data, it was determined that female participants scored higher on the EAT-26 and the EDI, thus implying that females are more inclined to develop eating related dysfunction. Therefore, the results indicate that there is a relationship between gender of the participants and the total scores of the EAT-26 and the EDI respectively. Hence, the hypothesis is accepted and gender is related to the development of eating pathology as measured by the EAT-26 and the EDI

G. Race does have an influence on the propensity to develop eating pathology as measured by the EAT-26 and the EDI

Table 16 ANOVA results for race and the EAT-26 and the EDI

		TOTEAT	TOTEDI
RACE	F	1.37	1.94
	p	1.25	0.14

df = (2, 175)

N = 177

There is no significant difference between the various racial groups and the total scores of the EAT-26 and the EDI, respectively. Therefore, the hypothesis is rejected.

H. Socio-economic class does have an influence on the propensity to develop eating pathology as measured by the EAT-26 and the EDI.

Table 17 ANOVA results of the mother's socio-economic class and the EAT-26 and the EDI

		TOTEAT	TOTEDI
MOCUP	F	1.00	0.86
	p	0.43	0.55

df = (8, 166)

N = 174

Table 18 ANOVA results of the father's socio-economic class and the EAT-26 and the EDI

		TOTEAT	TOTEDI
FOCUP	F	1.01	0.72
	p	1.01	0.67

df = 8, 162)

N = 170

There is no significant difference between the socio-economic classes of both the mother and the father and the total score of the EAT-26 and the EDI, respectively. Therefore, the hypothesis is rejected.

5.3 Qualitative Content Analysis

The next section will deal specifically with the categories and related issues obtained as a result of content analysis. Various themes and issues presented information related to the descriptions, processes, personality, body image, aetiology and experiences of eating dysfunction. The themes and issues are presented in a tabulated form (Table 19) and this is followed by a general discussion of the fundamental features of these categories.

Key to abbreviation used in Table 19: Content analysis categories		
+ = positive implication	- = negative implication	N/A = issues do not present with a positive or negative implication.

Table 19 Content analysis categories of binge eating disorder

Themes	Issues	Connotation
Family history of eating problems	History of obesity	N/A
	Reaction to obesity	-
	Reason for bingeing	-
Personality traits	Emotions extreme	-
	Aware of feelings	+
	Outgoing, funny	N/A
	Sensitive / shy	N/A
	Serious	N/A
	Temperamental	N/A
	Low self esteem	-
	Hide feelings	-
	Caring	+
	Quiet	N/A
Body perceptions	Dissatisfied	-
	Thin ideal and beauty	-
	Fat phobia	-
	Body expectation	-
	Body shape and depression	-
Peers	Criticisms	-
	Pressure to be thin	-
	Weight and comfort	+
Media	Thin models	-
Family influence	Preoccupation with diet	-
	Criticism about weight	-
	Reaction to criticism	-
	Relationship with mother	-
	Family reaction to binge	-
Daily nutrition	Eat less – stress	-
	3 meals	+
	Skip breakfast	-
	Unhealthy lifestyle	-
	Eat in afternoon	N/A
	Finish plate	-
	Feel stuffed	-
Weight loss method	Exercise	+
	Diet	+
	Vomit/ diet pills	-

Table 19 presents the various themes and issues on eating pathology that was raised during the course of the interviews with F09, E13 and C. The results of the content analysis revealed some similar responses (body size, daily nutrition and weight loss methods) related

to eating dysfunction, however, in many instances, participants reflected individual perceptions and characteristics of eating pathology (personality traits). Under the themes section, some of the fundamental tenets related to eating pathology as raised by the interviewees. The issues developed around these themes are listed in the second column (Issues). The implications of the various issues are presented in the connotations column where the researcher provides suggestions on whether the various issues have a positive or negative effect on the overall psychological or physical health of individuals. A comprehensive discussion of the issues and themes raised in Table 19 are dealt with in greater detail in Chapter 6 under the various research questions.

5.4 Conclusion

Having provided the results of the quantitative and qualitative analysis, it is necessary to discuss these findings in relation to the biopsychosocial model of eating pathology. Therefore, the results chapter has formed the precursor to the discussion of the role of personality and body perceptions in the propensity to develop binge eating disorder. The analysis of the sample, descriptive statistics and reliability coefficients will form the first part of the discussion. Thereafter, the research hypotheses and questions will be discussed according to the biopsychosocial model of eating pathology.

Chapter 6: Discussion

6.1 Introduction

The statistical analysis revealed significant information regarding the sample under investigation. In order to fully understand the nature of the sample, the following discussion will present an analysis of the descriptive statistics (age, gender, race, socioeconomic class) and provide an overall summary of the complex mechanisms that influence the sample. Furthermore, a major proportion of the study is based on the results obtained from the EAT-26 and EDI measures. Therefore, it is necessary to ascertain the reliability of these measures within a South African sample by comparing the reliability coefficients with other South African studies. In addition, the underlying basis of this research is the biopsychosocial model of eating dysfunction

Therefore, the biological, psychological and soiocultural issues that were raised during the course of the analysis will be discussed within the framework of the primary and secondary research questions. Considering that the primary research questions fall under the psychological model of the biopsychosocial model, the discussion will begin with the analysis of the psychological dimensions, thereafter attention will be given to the biological and sociocultural models.

6.2 The nature of the sample

In this study, the total sample size was 183. From that sample, only 3 individuals identified with instances of eating pathology volunteered to participate in interviews. This is a fairly small sample considering the amount of variables under investigation. The sample was a combination of both male and female students studying first year psychology at the University of the Witwatersrand in 2005. The sample was selected as eating disordered behaviours are reaching epidemic proportions in college campuses and eating disorders are said to begin during adolescence (Belangee et al., 2003; Dunn & Ondercin, 1981; Zaider et al., 2000).

6.2.1 Gender

There were more female participants (N = 138) than male participants (N = 42) in the overall sample. The disproportionate number indicated that almost two thirds of the sample comprised of female students. The main reason for this disparity is that many more female students than males are inclined to enrol for psychological courses. This was an inherent limitation of using psychological students as an even distribution of males and females could not be maintained.

Missing values were primarily due to participants not recording their gender status. It was necessary to examine the adolescent population as they are perceived as a possible high risk group for developing eating pathology (Tanofsky, Wilfley, Spurrell, Welch & Brownell, 1997). Considering that a larger female population participated in the study and only female

students participated in the interview process, it was assumed that the personality traits identified in the sample were more likely to correspond towards females rather than males; similarly this principle applies to the other variables investigated in this study.

6.2.2 Age

The sample age ranged from 17 to 36 which is uncommon for first year university entrance as most students are in their late teens, having just completed their matriculation and are entering university. The distribution is positively skewed suggesting the absence of a number of older people in the sample. This is important and relevant for this study as the researcher was primarily interested in the risk group for developing eating pathology and this is primarily in the adolescent stage of development (Belangee et al., 2003). It is important to mention the role of outliers as some of the values were situated a considerable distance away from the mean score. This could be related to the possibility that some students in the first year psychology class were much older and clearly separate from those that just came out of high school. Considering that the age requirement at university is not a matter of contention, this sort of distribution is sometimes observed where there will be a very small group of mature and older students studying at university. Furthermore, according to the Kolmogorov-Smirnov test and the histograms, the age range was not normally distributed therefore assumptions of normality could not be met for age.

6.2.3 Racial Groups

The race groups were divided into 3 categories. The first category 1 was labeled African and it comprised of participants from the Black and Coloured racial groups. The second category

2 was labeled Caucasian and it comprised of participants from European and Caucasian backgrounds. The third category 3 was labelled Asian and it comprised of participants from Asian and Indian racial groups. This form of categorization was done because the sample size was relatively small and reducing the categories could allow for effective exploration of the primary and secondary aims of the study. The largest group was that of Caucasian participants with a frequency of 81, followed by African participants with a frequency of 59 and finally the Asian group with a frequency of 38.

Missing values were primarily due to participants not recording their racial status There were an unequal distribution of Caucasian (N = 81) and the African participants (N = 59). The distribution of the sample does not adequately represent the racial population of South Africa as South Africa is a country with predominantly Black citizens. Therefore, any statistical analysis using this variable needs to be interpreted with caution as generalisability of the results across racial lines cannot be determined seeing that a predominately Caucasian sample was used in the present study.

6.2.4 Socio economic Status

Since the first year psychology class was selected as the sample, the researcher was of the preconceived notion that most of those registered would be in their late teens and subsequently dependant on their parents for financial support. This was confirmed from the data where 81% of the sample consisted of students in their late teens who were dependant upon their parents. Therefore, the socio-economic status of the participant's parents/legal guardians was also investigated. The most common classes with regard to the fathers were in the Managerial (N = 61), Professional (N = 34) and Supervisor (N = 36) categories. The rest

of the sample was distributed among the remaining socio-economic classes i.e. Lower grade (N = 1), Unemployed (N = 11) and Deceased (N = 8). The eighth category included participants whose parents relied on pensions and disability grants for financial support (N = 8).

The socio-economic class of father's was predominately in the first three categories with individuals scoring very high in the upper socio economic class. It can be proposed that the distribution within the first three classes are not in accordance with those seen in the population in South Africa as most of the employees are unskilled or semi skilled. However, it is applicable to mention that most parents that send their children to university are within the higher socio-economic range group and are well qualified (Sikhakhane, 2006). It is significant to mention that that a large number of participants did not record the socio-economic status of their parents (N = 21), hence there were missing data for both the mother's and father's socio economic status.

With regard to the mother's socio-economic class, the category that was most dominant was the Supervisor (N = 44), followed by Managerial (N = 41), Professional (N = 34) and Housewives (N = 32). The rest of the sample were distributed among the remaining socio-economic categories i.e. Higher grade supervisor (N = 7), Lower grade supervisor (N = 4), Unemployed (N = 5), Deceased (N = 5) and Pensions/disability grants (N = 3). As with the fathers there are a large number of mothers who were in the higher socio-economic class. This is in line with the finding that there is a growing trend of women in secular employment (Klasen & Woolard, 2000 as cited in Casale & Posel, 2000) In addition, the majority of

students that attend university have parents in the upper socio-economic group which could account for the mother's being in the higher socio-economic group (Sikhakhane, 2006). Therefore the description of the sample revealed that participants were predominately Caucasian female, in the 17-20 year age group and coming from the upper socioeconomic class. Any generalisability of the results needs to be viewed with caution as this sample is not reflective of the majority of people living in South Africa. Having presented the applicability of the sample in the South African context, it is necessary to do the same with the EAT-26 and the EDI, the primary measures utilized in this research to determine whether the measures present consistent and reliable findings across South Africa studies.

6.3. The reliability coefficients of the EAT-26 and the EDI

This research examined the reliability coefficients of the EAT-26 and the EDI in order to ascertain the reliability of the instruments in measuring eating related pathology. The reliability of the instrument is related to whether the instrument delivers the same results on repeated trials. Therefore the reliability coefficients of this present study were compared to other studies that have used the EAT-26 and the EDI in order to determine whether there are consistencies and patterns in the data. The nature of the study examined the propensity of developing eating pathology in a non clinical sample. A similar study presented by Silva (2002) investigated the propensity to develop eating disorders (anorexia nervosa and bulimia nervosa).Furthermore, the study conducted my Delport (2005) investigated the tendency to develop eating disorders in adolescent males. Therefore the reliability of the present study will be assessed against the results of Silva (2002) and Delport (2005) in order to establish

whether the coefficient results of the EAT-26 and the EDI are closely related to the research proposed by Silva (2002) and Delport (2005).

6.3.1 The reliability of the EAT-26

The statistical figures for the skewness of the EAT-26 total and subscales dieting, food preoccupation and oral control presented distributions that were skewed to the left which indicated that most of the students reported lower levels of eating dysfunction. The likelihood of establishing the reliability of the results was supported by the use of a non clinical sample in investigating the propensity to develop eating pathology. By relying on a non clinical sample, the statistical interpretation is based on the premise that fewer students would present with the clinical diagnosis of eating disorders (anorexia nervosa, bulimia nervosa) , which is the primary objective in this study where the propensity to develop dysfunctional eating and beliefs systems are investigated. Therefore, this study is measuring the propensity of student's developing eating pathology (mixed patterns of maladaptive eating, behaviours and beliefs not reflected in the specific diagnostic category of eating disorders) and not eating disorders per se.

Upon analysis of the EAT-26, the internal reliability was established by Cronbach alpha coefficient as all of the alphas were considerably high thereby cementing the reliability of the instrument in measuring what it is suppose to measure (0.78 - 0.90). Similarly, the study done by Silva (2002) and Delport (2005) investigated the propensity of girls and adolescent boys developing eating disorders in a South African sample. Examination of the Chronbach's alpha of the subscales and the mean values for these study revealed a striking

pattern. Upon comparison with the present study, the Chronbach's alpha coefficients between the three studies are consistent as they are also very high.

However, the mean difference for the dieting subscale is dissimilar and this could be due to the larger sample utilised by Silva (2002) and the relatively smaller sample used by Delport (2005). Furthermore, unlike the present study who focused on both males and females and the study by Delport (2005) who focused exclusively on males, the sample used by Silva (2002) were exclusively females and research has supported the findings that females are more likely than males to engage in dieting behaviours (Bruch, 1974; Duran et al., 2000). In addition, research has indicated that males are more comfortable with their body size and are less likely to engage in dieting (Drewnowski & Yee, 1987). The subscale means are presented below in Table 20.

Table 20 Comparison of the EAT-26 subscale means

	Present study N = 183		Silva's study (2002) N = 243		Delport study (2005) N = 67	
	Means	Alpha's	Mean	Alpha's	Means	Alpha's
Dieting	5.10	0.84	8.87	0.75	1.97	0.87
Food	1.51	0.90	1.53	0.75	0.58	0.89
Oral	1.93	0.90	3.04	0.72	2.36	0.89

6.3.2 Reliability of the EDI

The research further examined the reliability of the EDI by comparing the mean scores and the reliability coefficients of the present study with Silva (2002) and Delport (2005) studies

as both studies examined the propensity to develop eating disorders in South Africa. Initially it is pertinent to reflect that the statistical figures for the skewness of the EDI total and the subscales reflected distributions that were normal except for the bulimia, interoceptive awareness and drive for thinness subscales which were skewed to the right. This means that most of the students reported lower scores in these subscales and an average score in the remaining subscales. The fact that there are fewer students in the sample with eating disorders (anorexia nervosa, bulimia nervosa) is beneficial in terms of the reliability of the results as the study is investigating the propensity of students to develop eating pathology and not eating disorders per se.

The internal reliability of the EDI was established by Cronbach Alpha. All of the reliabilities were considerably high which further cemented the reliability of the instrument (0.84 - 0.89). While there was consistencies of the subscale means of Silva's (2002) and Delport (2005) studies and the present study, there existed differences as perceived from the subscales Drive, Body, Perfect, Distrust, Aware and Maturity of all three studies. The discrepancies may be attributed to a larger sample size used by Silva (2002).

In addition, it is necessary to mention that Silva (2002) recruited a sample that was primarily Black females between the ages of 13 -18 years old. Furthermore, considering that Delport (2005) focused on an exclusive male sample, the differences in the mean scores between the studies may be attributed to gender differences with regards to eating attitudes. The most significant difference between the present study and Delport (2005) are presented in the drive for thinness and the body dissatisfaction subscale. The subscale means of the present study as well as the findings from Silva (2002) and Delport (2005) are presented in Table 21

Table 21 Comparison of the EDI subscale means

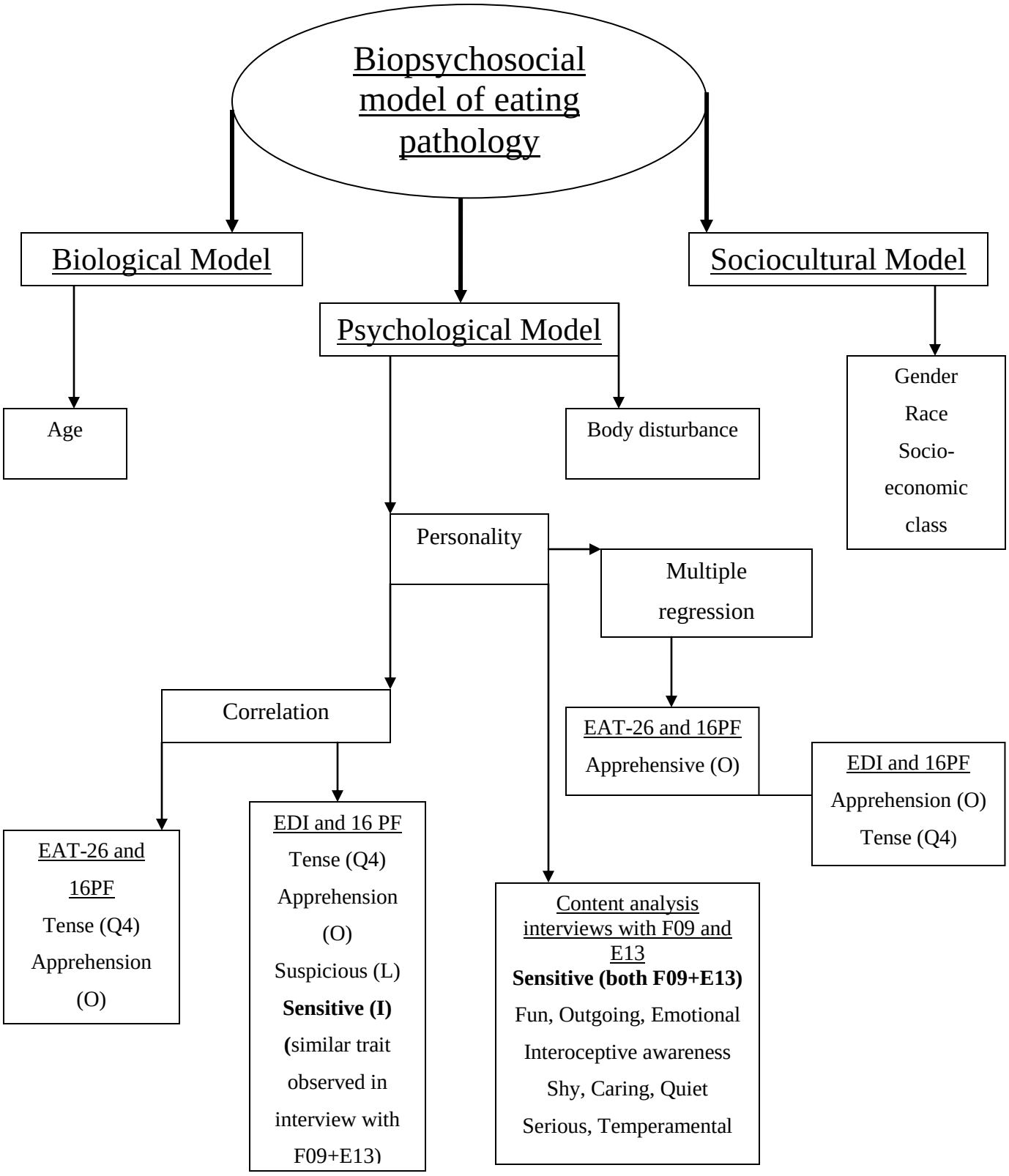
	Present study N = 183		Silva's study (2002) N =243		Delport (2005) N = 67	
	Means	Alpha's	Means	Alpha's	Means	Alpha's
Drive	4.09	0.87	7.43	0.78	1.82	0.88
Bulimia	1.95	0.88	2.31	0.74	0.94	0.88
Body	8.19	0.87	11.43	0.78	2.88	0.88
Ineffectiveness	5.33	0.84	5.50	0.78	5.34	0.88
Perfect	5.78	0.89	8.10	0.74	6.84	0.88
Distrust	3.80	0.89	5.24	0.75	4.12	0.89
Aware	4.34	0.86	7.65	0.75	3.78	0.87
Maturity	4.51	0.87	8.55	0.75	5.84	0.87

Having already provided a discussion on the demographic information, the next part of this chapter will focus on the primary and secondary research questions under the umbrella of the biopsychosocial model in order to elucidate the relevance of a multidimensional model in understanding the research questions that are related to the development of eating pathology. The primary research questions of this study fall within the psychological dimension; therefore, this will be initially discussed. Thereafter, the remaining research questions under the biological and sociocultural models will be presented.

A diagrammatical representation of these variables is integrated within the biopsychosocial model and this is presented in Figure 3 on page 159. From this diagram, it can be noted that

the study used the biopsychosocial model. The biological factors of age, the psychological factors of personality and body disturbance and the sociocultural factors of gender, race and socio-economic class arose as factors that may influence the propensity to develop eating pathology. In essence, Figure 4 serves as an adjunct to the discussion of the primary and secondary research questions which has been shown to fall under the biopsychosocial model of understanding eating pathology.

Figure 3 Representation of the variables that arose in this research which are related to the biopsychosocial model of eating pathology.



6.4 The psychological model

6.4 1.1 Primary research hypothesis

A. There is a relationship between eating pathology as measured by the EAT-26 and the EDI and specific personality traits as measured by the 16PF.

The EAT-26 and the EDI had significant positive correlations with various personality factors. The apprehension personality factor (factor O) was found to have a significant positive correlation with the EAT-26 ($r = 0.33$, $p < .05$) and the EDI ($r = 0.41$, $p < .05$). An individual with apprehension personality trait is characterized as being anxious, apprehensive, self reproaching, depressive, worrying and guilt prone. These characteristics in individuals with a propensity to eating pathology are in accordance with many studies on eating disorders (Cooper, 1995; Dunn & Ondercin, 1981; Dunkley & Grilo, 2007; Gold et al., 2003; Fassino et al., 2004; Heatherton & Baumeister, 1991; Leon et al., 1995; Milos et al., 2004; Naute et al., 2004; Schwarze et al., 2003). According to Scott and Baroffio (1986) the anxious traits are bound and displaced onto somatic concerns (eating) which results in maladaptive behaviours such as binge eating. The anxiousness characteristic of this personality trait has in common the excitability personality trait, a characteristic that has been recorded in individuals with binge eating disorder (Molinari & Ragazzoni, 1997; Belangee et al., 2003).

A positive correlation was found between a low ergic tension – high ergic tension personality factor (factor Q4) and both the EAT-26 ($r = 0.28$, $p < .05$) and EDI ($r = 0.38$, $p < .05$). A high ergic tension (tense) personality trait is characterized by qualities such as tension, frustration, over-excitability and impatience. According to Fassino et al. (2003) high tension is associated with feelings ranging from tension to fury. Therefore, the high ergic tension trait does not only include tension and impulsiveness, it also fuels the tendency to express anger both internally and externally.

There appeared to be a significant positive correlation between the EDI and a trusting – vigilant personality factor (factor L), $r = 0.20$, $p < 0.05$. A high score on this factor pinpointed qualities such as suspicious, skeptical and hard to fool. These characteristics are presented in research (Becker et al., 1987; Belangee et al., 2003; Costin, 1999; Dunn & Ondercin, 1981). These individuals become suspicious of people around them and adopting introversion traits such as being suspicious and distrustful which may serve as a means of protection against harmful experiences (Belangee et al, 2003; Sohlberg & Strober, 1994; Thompson- Brenner & Westen, 2005). Furthermore due to the physical manifestation of the eating pathology, (binge eating, purging, restrictive eating) these individuals tend to be suspicious that society is aware of their condition (Scott & Baroffio, 1986).

Lastly, there appeared to be a significant positive relationship between the EDI and a sensitive versus tough minded personality factor (factor I), $r = 0.20$, $p < .05$. A high score on this trait describes characteristics such as tender mindedness, dependant, overprotected and sensitive. Macías and Leal (2000) and Scott & Baroffio (1986) recognised the sensitivity and

dependent characteristics in individuals with binge eating symtomatology. Research by Narduzzi and Jackson (2002) associated dependency with the need for acceptance and admiration.

It is necessary at this point to bring in the results of the qualitative analysis as further support for the role of personality traits in the onset of eating pathology. There were 3 interviews conducted where the participants acknowledged experiencing instances of eating pathology. In the interviews with F09, E13 and C, the summary of their personality traits mentioned during the course of the interviews were: outgoing, fun, sensitive, interoceptive awareness, emotional, shy, caring, quiet, serious, and temperamental (moody, high strung, and excitable).For instance, F09 said *'I am aware of my feelings. I am outgoing, fun, sensitive. I get very emotional….serious, temperamental and low self esteem.* Participant E13 *said, 'I hide my feelings. I am very shy, caring and introverted. If I know you then I am loud and fun'.* Furthermore, F09 described her personality and emotions as, '*…..too extreme'.* The personality traits related to being sensitive and fun was found to be in common with both participants. In essence, the personality traits observed during the interviews were supported by previous research on eating related disorders (Belangee et al., 2003; Cassin & von Ranson, 2005; Dunn & Ondercin, 1981; Dominy et al., 2000; Fassino et al., 2004; Kleifeld et al., 1994; Macias & Leal, 2000; Scott & Baroffio, 1986; Schwartz, 1998; Sunday et al., 1994; Webber, 1994; de Zwaan et al., 1994).

In light of the interview carried out with F09, it was revealed that the participant was been treated for bouts of depression. While there is evidence to support the claim that depression is

observed in individuals with eating disorders (Aragona & Vella, 1998; Cooper, 1995; Gold et al., 2003; Kleifeld et al., 1994; Naute et al., 2004; Schwarze et al., 2003; Webber, 1994), the objective of this study is focused solely on personality and body perceptions. Therefore, although depression may be significant to the development of eating pathology, it is not in line with the aims of the research and will not be given additional attention.

The quantitative findings did not conclusively support the results obtained from the interviews. The only trait that seems consistent throughout the quantitative (EDI) and qualitative findings is the personality trait, sensitivity. However, considering that only three individuals participated in the interview process, accurate generalisability of the results cannot be made in relation to the quantitative findings. Furthermore, had the researcher pursued the items related to personality traits in more detail, a more comprehensive synopsis of personality could have been investigated against the group trends observed in the quantitative analysis. However, the overall consensus is that personality appears to plays an important role in the development of binge eating disorder.

Therefore, as a result of the quantitative and qualitative analysis, the main psychological dimension presented in this study to predispose students to eating related pathology (i.e. personality) does appear to play an important role (Dunn & Ondercin, 1981; Cooper, 1995; Narduzzi & Jackson, 2002). It is suggested that the following personality traits, apprehension, high tension, sensitivity and suspiciousness can influence students to develop binge eating disorder. In addition, the results of the content analysis suggest that the common personality trait observed between E13 and F09 was the sensitivity trait.

The results obtained are significant considering that a non clinical sample was used and the complications associated with the maladaptive eating did not interfere with the investigations into the true personality traits of adolescents with eating related pathology. However, some students in the sample may have already presented with the symptoms of eating disorders without the researcher's knowledge of the condition. The similarity of the personality traits observed in this study appears to be congruent with international studies and suggests that the characteristics of eating pathology appear to be universal. Furthermore, the knowledge that certain personality traits play a role in the onset of eating pathology may enhance the understanding of the predisposing factors in the South African context.

B. The 16 personality factors influence the propensity to develop eating pathology as measured by the EAT-26.

The regression equation for the total score of the EAT-26 demonstrated that the self-assured versus apprehensive (factor O) is able to predict 11% of the influence personality has on the predisposition of student's to develop eating pathology as measured by the EAT-26. This result is in line with many studies investigating the personality profile of individuals with eating disorders (Dunn & Ondercin, 1981; Greenberg, 1986; Pryor & Wiederman, 1996; Scott & Baroffio, 1986; Westen & Harnden-Fischer, 2001). In essence, the relationship suggests that the apprehension personality factor (factor O) in conjunction is a possible predictor for the development of eating dysfunction. Therefore, it is clearly suggested that the psychological construct of personality does appear to play a role in predicting the predisposition of students to develop eating pathology as measured by the EAT-26, to an

extent. The remaining 89 % is attributed to other factors which is consistent with the explanation supplied by the biopsychosocial model. The model proposes that various tenets located within the biological, psychological and social dimensions are implicated in the development of eating pathology.

C. The 16 personality factors influence the propensity to develop eating pathology as measured by the EDI.

Whereas, the EAT-26 isolates self-assured versus apprehensive (factor O) as the primary predictor of eating pathology, the EDI revealed both self-assured versus apprehensive (factor O) and relaxed versus tense (factor Q4) as working in conjunction to predict the development of eating pathology. The regression equation revealed that these two factors (factor O and Q4) are able to predict 21% of the influence personality has on predisposing student's to develop eating pathology as measured by the EDI. Thus, it appears that the personality traits of apprehension and tension in conjunction account for the influence personality has on predisposing students to develop eating related dysfunction. Previously it has been found that individuals with eating pathology have been reported to be anxious (Costin, 1999; Dunn & Ondercin, 1981; Gold et al., 2003; Leon et al., 1995; Milos et al., 2004; Schwarze et al., 2003). The anxiety and proneness to guilt observed in binge eating disorder is similar to bulimia nervosa where worry, pathological guilt, nervous tension, and irritability were observed as well as excessive worry, irritability and emotionally labile (Pryor & Wiederman, 1996). Hence the psychological construct of personality does appear to play a role in predicting the propensity of student's to develop eating pathology as measured by the EDI.

The remaining 79 % of unexplained variance could be due to the influence of other factors. Therefore, it can be that other factors appear to contribute in the predisposition of students to develop eating pathology, which reiterates the biopsychosocial model understanding of disordered eating. Thus, there are various hierarchical tenets within the biological, psychological and social dimensions which are implicated in the development of eating related pathology.

6.4.2.1 Secondary Research Hypothesis

D. There is a relationship between body image disturbance as measured by the Body Dissatisfaction subscale of the EDI and the total EAT-26 and EDI scores.

There is a significant positive relationship between Body Dissatisfaction subscale of the EDI and EAT-26 total ($\underline{r} = 0.55$, $\underline{p} < 0.05$). This suggests that participants scoring high on the Body Dissatisfaction subscale of the EDI will also score higher on the EAT-26 total. In addition, there is a significant positive relationship between Body Dissatisfaction subscale of the EDI and the EDI total ($\underline{r} = 0.79$, $\underline{p} < 0.05$). This suggests that participants scoring high on the Body Dissatisfaction subscale of the EDI will also score higher on the EDI total. Furthermore, the results of the interviews with participants F09, E13 and C are consistent with the quantitative finding where all three participants expressed dissatisfaction with their current body shape and size. For example, F09 said '*I don't like my body weight and shape',* and E13 said' *It is very hard and I hate the way I look. ……I look at myself in the mirror and I see the bulges and the fat……. I want my stomach to be flat'.* The researcher detected that

although the participants were in the normal weight category, the apparent exaggerated disapproval of their shape and size is a clear indication of a distortion in body perception.

In a culture where the sociocultural pressure to be thin is glorified (Garner & Garfinkel, 1980; Thompson et al., 1999; Thomas & Frank, 2003; Striegel-Moore et al., 1986), it seems possible that those who do not meet the stringent demands of the thin ideal, are continually getting depressed about their bodies. Therefore, the apparent dissatisfaction with one's body appears to be closely linked to negative feelings of depression. For instance, F09 said, *When my clothes don't fit…I get depressed'* and E13 said, '*Being overweight I feel depressed'.* Conversely, the perception of being fat is associated with negative connotations such as dirty, slovenly, greedy and untidy (Bruch, 1974

According to Costin (1999) this form of cognition about thin ideal and fatness is referred to as dichotomous thinking where things are either black or white and never in between. Because a person can not live up to the western images of super thin models, they perceive themselves as fat (there is no in between) and hence acquire this negative body perception

Therefore, the results from the quantitative and qualitative study revealed that participants with an overall dissatisfaction with the shape and size of certain body regions, such as stomach, hips, thighs, buttocks appears to have higher propensity to develop eating related disorders (Freeman, 2002; Bruch, 1974). Many previous studies have found that body image disturbance is related to the development of eating pathology (Adami, 2001; Benn-Tovim et al., 1990; Bruch, 1974; Cargill et al., 1999**;** Cummins & Lehman, 2007; Dana, 1987; de

Zwaan et al., 1994; Geller et al., 2000; Hrabosky et al., 2007 ; Hilbert & Tuschen-Caffier, 2005; Mussell et al., 1996; Rosen, 1996; Spitzer et al., 1993; White & Grilo, 2007).

The discussion so far indicates that while individuals with eating disorders exhibit characteristics of body dissatisfaction (Grilo, 2002), there is further support that body dissatisfaction is present before the onset of any eating pathology (Dunkley et al, 2001; Senekal et al, 2001). Therefore, it can be proposed that the psychological factor of body image disturbances has the potential to predispose students to develop eating related dysfunction. Within the psychological field, aspects such as developmental and perceptual theories are used to account for the influence that body dissatisfaction has on the propensity for students to develop eating pathology (Heinberg, 1996; White, 1992).

Therefore, the biopsychosocial model appears to receive support as the best model to illustrate the predisposition of students to develop eating pathology. Two of the dimensions (psychological and sociocultural) are used to account for the influence of body dissatisfaction in the onset of eating pathology while the third (biology) can be integrated within the psychological and sociocultural explanation.

Considering the complex nature of the disorder, it is only fitting that a multidimensional model be adopted in order to fully understand the aetiology of eating pathology. As demonstrated from the Figure 4 on page 158, there are other factors that work within the biological, psychological and sociocultural dimensions to influence the propensity to develop eating pathology. Therefore, the following section will continue with a review of the

secondary research questions that fall under the biological and sociocultural models of the biopsychosocial model in order to determine whether these variables are implicated in the onset of eating pathology.

6.5 The biological model

6.5.1.1. Secondary research hypothesis

E. Does age of the participant have an influence on the propensity to develop eating pathology as measured by the EAT-26 and EDI?

The results indicate that there was no significant relationship between the age of the participant and the total scores of the EAT-26 and the EDI, respectively. The age range was not normally distributed as most of the participants were in the late adolescence stage. This finding is possibility indicative of the recent trend where younger children are developing symptoms of eating dysfunction (Cole, 2007; Binford et al., 2004; Hamilton, 2007; Marcus, et al., 2003).

Furthermore, a study done by Vervaet (2004) suggested that older individuals were more likely to present with instances of binge eating. Therefore, it does appear that there are no age specifications or vulnerable age periods that predict the onset of eating pathology due to the contradictory information presented in this research and other studies. While the

qualitative analysis revealed that the participants were within the 18-20 age grouping, the relatively small amount of interviews carried out cannot be the sole criteria for supporting the research that the teenage years are implicated in the onset of dysfunctional eating behaviours. Hence, it cannot be clearly determined if the biological factor of age is an important factor in influencing the propensity to develop eating pathology.

Continuing with a discussion of the variables implicated in the onset of eating pathology, the following section will focus attention on the sociocultural dimensions. In particular, the role of gender, race and socioeconomic class will be assessed to determine whether these factors are vulnerable predictors in the development of eating pathology.

6.6 The sociocultural model

6.6.1.1. Secondary research hypothesis

F. Gender is related to the development of eating pathology as measured by the EAT-26 and EDI scores.

There was a significant positive relationship between gender and the total scores of the EAT-26 ($r = 0.16$, $p < 0.05$) and the total score of the EDI ($r = 0.23$, $p < 0.05$). This means that high scores on the EAT-26 and the EDI are related to whether the participant is a male or a female. In this case, the data revealed that female participants were most likely to present

with instances of eating pathology. These results are in line with most research that implicated females as most vulnerable to develop eating related disorders (Attie & Brooks-Gunn, 1989; Leon et al., 1995; Favazza, 1996; Goldfein et al., 2000; Thompson & Sherman, 1993; Senekal et al., 2001; Szabo & Grange, 2001).

It is suggested that gender role socialisation leads women to be particularly concerned about their physical appearance as a means of gaining approval from others (Kearney-Cooke & Steichen-Asch, 1990). In addition the university environment provides the context where the social values of weight related behaviours are maintained especially by females as a means of striving towards the western ideal of thinness (Gilligan, 1990; Senekel et al, 2001). Therefore, the socio-cultural dynamic of gender is an important factor in predisposing the onset of eating pathology.

G. Race does have an influence on the propensity to develop eating pathology as measured by the EAT-26 and the EDI.

There was no significant difference between the various racial groups and the total scores of the EAT-26 and the EDI. In the past, research on eating pathology was perceived as rare in non Caucasian individuals (Talleyrand, 2006; Szabo & le Grange, 2001). However, recent research has discovered the manifestation of eating related problems across the racial lines (Becker & Burwell, 2003; Cachelin et al., 2000; Costin, 1999; Davies, 1995; Lachenmeyer & Muni-Brander, 1988; Szabo & Grange, 2001; Szabo & Hollands, 1997; Wilfley et al., 1995).

One reason for this development is due to the process of acculturation of the western norms of thinness and body dissatisfaction where Black individuals are developing a greater degree of eating related disorders (Senekal et al., 2001; Szabo & Grange, 2001). Szabo and Hollands (1997) and Szabo and Grange (2001) suggests that there is a homogenisation of eating related psychopathology across racial lines where attitudes concerning dieting and ideal body size from westernised societies have been internalised thus resulting in the development of eating pathology. Although, it cannot be clearly determined if the sociocultural factor of race is an important factor in influencing the propensity to develop eating pathology, what has been observed is the relative permeation of eating dysfunction across racial lines.

H. Socio-economic class does have an influence on the propensity to develop eating disorders as measured by the EAT-26 and the EDI.

There was no significant difference between the socio-economic classes of both the mothers and the fathers and the total score of the EAT-26 and the EDI, respectively. This result was significant considering that the sample consisted primarily of parents from higher socio-economic classes. Consequently, it may be apparent that the prevalence of eating related disorders have permeated the socio-economic classes, making both higher and lower classes vulnerable to developing these dysfunctional eating behaviours (Pate, Pumariega, Hester & Garner, 1994; Szabo & Grange, 2001; Soh et al., 2006, Striegel-Moore et al., 2001).

An attributing factor to this trend is the role of globalisation in the distortion of boundaries between the socioeconomic classes (Polivy & Herman, 2002; Soh et al., 2006). The sample recruited for the interviews were relatively small, therefore any results obtained in the interviews as a result of the socio economic class may be viewed as tentative. However, the results of the study revealed that the sociocultural factor of socioeconomic class was not an important factor in influencing the propensity to develop eating pathology.

General discussion and Conclusion

This study has successfully accomplished the task of exploring the complex interactions of both internal and external factors that influence the development of eating pathology. The specific research questions of this study were discussed under the respective categories of the biopsychosocial model. With regards to the internal factors, this research examined the role of the psychological tenets personality and body perceptions. Furthermore, the biological effect of age was considered. The external factors that were explored related to the sociocultural variables (gender, race and socioeconomic status)

Under the psychological model of the biopsychosocial model, it was found that personality traits do play a role in the propensity of students to develop eating pathology. Since the study is correlational in nature, no causal inferences can be made regarding any of the variables under investigation. The students in the sample those that were inclined to develop eating pathology displayed personality traits such as apprehensive, tense, suspiciousness and sensitivity. Upon analysis of the personality predictors, it was found that apprehension was the possible predictor of eating pathology as measured by the EAT-26. Furthermore, the EDI analysis revealed that apprehension and tension in conjunction predicted the propensity to develop eating pathology. These findings are supported by previous research on personality and eating disorders (Belangee et al., 2003; Dunn & Ondercin, 1981; Dominy et al., 2000; Molinari & Ragazzoni, 1997; Pryor & Wiederman, 1996; Westen & Harnden-Fischer, 2001). Therefore, it can be suggested that the psychological construct of personality plays a contributory role in predisposing individuals to develop eating pathology. Any unexplained

variables are possibly located within one of the other dimensions of the biopsychosocial model.

The next psychological factor implicated in the development of eating pathology was body perceptions. From the analysis and discussion of the quantitative and qualitative data, it was noticeable that negative body perceptions appeared to be clearly linked to the development of eating related dysfunction. There is considerable support for this finding from previous studies (Adami, 2001; Benn-Tovim et al., 1990; Bruch, 1974; Cargill et al., 1999**;** Dana, 1987; de Zwaan et al., 1994; Leon et al., 1993; Fairburn & Peveler, 1993; Geller et al, 2000; Grilo, 2002; Hilbert & Tuschen-Caffier, 2005; Mussell et al., 1996; Rosen, 1996; Spitzer et al., 1993).

The biological model considered the role of the demographic variable age and this was not found to significantly affect the onset of eating pathology. The sociocultural model investigated the influence of the gender, race and socioeconomic class in the development of eating pathology. The demographic variables of race and socioeconomic class were not found to be significant; however, the sociocultural influence of gender appeared to play an important role in the predisposition of students to develop eating pathology. (Favazza, 1996; Goldfein et al., 2000; Leon et al., 1995; Senekel et al., 2001; Szabo & le Grange, 2001; Thompson & Sherman, 1993).

Therefore, the factors implicated in the propensity to develop eating pathology appear to be universal phenomena and it is possible that this South African sample did not differ from samples around the world. Although this study was correlational in nature, it is believed that this research has uncovered aspects for the diagnostic clinician on factors that predispose

students to develop eating pathology. In essence, eating pathology can be perceived as a universal condition that involves a multidimensional model (biopsychosocial) to understand the various mechanisms that work to significantly influence the propensity to develop this condition. The results of this research have been discussed and explained in terms of the biopsychosocial model. The next chapter will deal specifically with the limitation of the study.

Chapter 7: Limitation of the Study

7.1 Introduction

The investigation so far provided information on the various tenets within the biopsychosocial model that influence the propensity to develop eating pathology. While the reliability of the results appears to be universal phenomena, there were some limitations that need to be mentioned as this could have played a role in influencing the overall findings of this study. Therefore, this chapter will explore the limitation of this research by discussing the limitations presented within the triangulation model, the instruments, statistical methods, content analysis, sample and internal and external validity.

7.2 Limitations of the triangulation model

The current study used the multi methods approach to investigate the propensity of students to develop eating pathology. The triangulation model was seen as the most suitable model for this study as it has the ability to establish the validity and authenticity of the results and it is a familiar method of choice by many researchers when investigating both qualitative and quantitative data (Creswell, 2003). As the study progressed, it was apparent that the triangulation method of collecting data assisted in reducing time expenditure. However, the major disadvantage of the model that was observed in this study related to the amount of effort and expertise required to adequately research a phenomenon that has two separate

methods. It was also difficult to compare the results of two analyses with data from different methodologies. In addition, many researchers are unsure of how to handle discrepancies in the results. However, in this study the discrepancies were minimal and interpreting the results was not a problem. Furthermore, the requirement that researchers be familiar with both the qualitative and quantitative paradigms was perceived as a challenge for the present study (Creswell, 2003).

The primary shortcoming of this study is due to the relatively small number of interviews conducted (N = 3) where patterns of consistencies in personality traits could not be fully observed. Despite the small number of participants taking part in the interview process, a large amount of information and issues were presented which were not accommodated and reflected in the quantitative analysis where the primary focus of the study was on personality and body perceptions in individuals inclined to develop eating pathology. Therefore, a limitation of the study was that the wealth of information raised in the qualitative analysis could not be substantiated or verified by the quantitative analysis and the researcher experienced a degree of uncertainty as to the validity and accuracy of the findings.

The next disadvantage relates to the research design. Within a quantitative paradigm, there is the predetermined idea of presenting the research design including the hypothesis before the research actually begins (Lincoln & Guba, 2000; Cupchik, 2001). The design determines the relevant information that will be studied prior to the actual investigation being carried out. This practice serves to restrict the options of the researcher as well as the effectiveness of the results. This was apparent when the variable gender was investigated where the researcher did not consider the possibility that most of the participants studying psychology were

mainly women. Had the researcher known this reality then another discipline would have been considered as well, specifically one that has mainly male students, for example, engineering.

Within the quantitative part of the analysis, a cross sectional correlation design was used to measure the role of personality and body perceptions in individuals with a propensity to develop eating pathology. This method involves the process of collecting data at one point in time in order to measure two or more variables simultaneously and assess the extent to which they change together (Rosnow & Rosenthal, 1996). This strategy is based on observations of a number of variables occurring at the same point in time.

This method has difficulties with respect to internal validity, particularly with instrument reactivity. The present study administered a once off battery of tests which lasted about 60 minutes. Although the time taken to complete the questionnaires was relatively short students complained that the tests were very time consuming and tedious and this could have impacted negatively on their answers (Rosnow & Rosenthal, 1996). Due to the fact that the questionnaires appeared boring, it seems likely that many were more aware and discouraged by the lengthy questionnaire than answering as honestly as possible. The following discussion will continue on the limitations by focusing on the instruments, statistical mechanisms, sampling and other factors that were used for the present study.

7.3 Limitation of the instruments

Personality tests appear static in nature as they are not designed to engage with the self as knower. Therefore, it can play a role in confining the interaction between personality traits and eating dysfunction (Silva, 2002).

Another major limitation of the instruments used was that they did not present the proper items to accommodate the male participants. Many of the male participants directed the researcher's attention to the fact that certain items in the questionnaires were specifically related to females (item 23 in the EAT-26 ask participant's if they have regular menstrual periods). A further limitation is that many of the participants questioned the content validity of the items in the questionnaire that was used to measure personality traits. The students could have perceived that the items in the 16 PF were rigid and not really measuring their personality.

The lack of understanding on the part of the student's of many of the items in the questionnaires draws attention to the multilingual society and that many of the participant's used English as a second language. The misunderstandings of the meaning of certain items were noted as many students took their time to answer the questions. Furthermore, they repeatedly asked the researcher to explain the meaning of certain items in the questionnaires. In addition, many students complained that the tests were too long and this was seen when a large number of questionnaires were handed back to the researcher. Therefore, the possibility for acquiescence bias was a potential threat.

A major limitation of the interview schedule was that it was not piloted. By piloting a questionnaire, unforeseen problems related to the items can be brought to the researcher's attention. Furthermore, the reliability and validity of the interview schedule was not demonstrated, therefore, whether the test measures what was intended or whether it was consistent and reproducible was not determined by this study (Rosnow & Rosenthal, 1996). However, the research relied heavily on the quantitative data and used the qualitative aspects to support the quantitative findings and not to verify causal relationships.

Although a semi structured interview schedule was used, it was determined upon review of the items in the interviews, which the participants did not expand on certain issues thereby reducing the substance and applicability of the information. For instance, all participants reported negative body perceptions. Had the researcher allowed for more flexibility in probing it could have been determined the extent of distortion and the ideal body size and shape that participants wanted. Therefore, the limitation of interviewing skills was apparent as the researcher focused mainly on the items in the interview schedule instead of allowing for flexibility of questioning.

Furthermore, interviews in general are perceived as time consuming task and due to the amount of time needed for the present interviews (60 minutes), it was difficult to initially gain access to willing participants (Silverman, 1997). In addition, due to the semi structured nature of the interviews, the control over the interview process was reduced as the participant brought in a lot of other issues that, although, significant to the topic were not relevant to the focus of the present research (Smith, 2003). On many occasions during the interviews the researcher had to guide the participant back to the topic (Briggs, 1986).

7.4 Statistical limitation

Multiple regression can determine that a set of independent variables can account for and explain the variance of the dependant variable and it can establish the predictive importance of the independent variables (Rosnow & Rosenthal, 1996). The use of the forward stepwise method is a stringent means where the independent variables predict the variances in the dependant variable. They exclude variables that add nothing of value to the prediction (Meyer, Gamst & Guarino, 2005). A major criticism of forward stepwise is that the size of differences between two variables that predict the dependant variable may be very small and there is a possibility for the variable may be excluded on account of a very small difference (Meyer et al., 2005). Furthermore, the inability to cope with the 'suppressor variable' (variable that reduces a relationship between other variables) has been a limitation of forward stepwise multiple regression (Meyer et al., 2005). A suppressor variable is correlated together with one or more of the other predictor variables (Meyer et al, 2005). According to the present study the regression coefficients were between -1 and +1, which supports the notion that the suppressor variable was not evident in this research.

The Pearson's Correlation coefficient was used to measure the amount that two variables (X and Y) are similar while taking into account their variance. One of the major limitations of this statistical method is that the possibility exist that a third factor is responsible for the relationship as there is no causal inferences (Howell, 1997; Rosnow & Rosenthal, 1996).

7.5 The limitation of Content Analysis

The main disadvantage observed is the extremely time consuming task of identifying the various themes and issues (Smith, 2003). The process is subject to increased error when the relationship between words and phrases are used to attain higher levels of interpretation (Smith, 2003). Due to the use of open-ended questions and free form responses, there were a lot of difference in the degree of the responses and the answers varied in length, detail, and quality which added to the difficulty and complexity of categorisation. In addition, the reliability may be compromised by the subjective and human nature of the researcher (Berelson, 1971; Stemler, 2001). A common limitation of content analysis is the involvement of human decision makers in the content analysis procedure of coding, and analysis (Neuendorf, 2002). However, the content analysis process has provided a rich source of data in support of the various tenets and predisposing factors of eating pathology. In addition the results of the content categories assist in providing support for a biopsychosocial explanation of eating pathology.

7.6 Limitation of the sample

Considering that the sample used was a volunteer sample, the possibility exists for the influence of volunteer bias in the research. For instance, there is evidence to suggest that personality variables may play a role in discriminating between volunteers and non volunteers (Thompson, 1999). Therefore, it is possible that the sample maintained some

biases that are associated with being a volunteer and this could have affected with the overall results of the study.

A sample of 183 individuals participated in the quantitative study and from that, only 3 participants (identified with eating dysfunction) volunteered for the interviews. This sample is relatively small when considering the number of variables under consideration. In addition, the sample was skewed with an uneven representation of gender and race. This is not surprising considering that females have been historically vulnerable to developing eating related disorders and females generally are more inclined to participate in research. Furthermore, statistics reveal that the majority of Caucasian individuals in South Africa attend higher education institutions and this could explain the large numbers of Caucasian students participating in the present research (Sikhakhane, 2006). The present study is based on students studying psychology at the University of the Witwatersrand which limits the generalisability across results and the population validity of the research (Goldfein et al., 2000). The study is ecologically valid as it reflects behaviours of university students that actually occur in natural settings (university environment). Furthermore, young people are very vulnerable to contacting eating related disorders therefore some generalisability can be made with regard to the age of participants. In addition, temporal validity is also predicted since it is presumed that if a related study is conducted in a few years time, similar results will be obtained. For instance, the results of Silva (2002) study revealed consistent findings with the present study, where personality traits and body perceptions were related to the onset of eating disorders in female participants.

The second part of the research requiring individual's to participate in an interview process which yielded very few participants. During the quantitative analysis of the EAT-26 and the EDI, a total of 30 participants presented with high scores that indicated eating dysfunction. However, only 3 participants volunteered for the interviews. The poor response could be due to the secretive nature of eating pathology and the participant's choice for anonymity. In addition, considering that the end of year examinations was approaching, many students opted to focus on studying rather than to get involved in a research study. However, during the interview process, confidentiality was maintained. Furthermore, anonymity was kept during the interviews where the participants revealed no identifiable information and they were called by their code names (E13 and F09) respectively.

7.7 Conclusion

In essence, the limitations of the study are fundamental to mention as they play a vital role in affecting the overall results produced in the current research. These findings provide an overall eclectic and multidimensional perspective into the predisposing factors that are implicated in the development of eating pathology. Furthermore, it cannot be contested that the biopsychosocial model has been in the forefront of substantiating and explaining the propensity of individuals to develop binge eating disorder. Therefore, the central objective of the study was maintained as further insight into the factors that predispose students to develop eating pathology were presented.

Having produced the necessary results and limitations, it is pertinent to discuss the implications of these findings in regard to the theory and practical setting. Therefore, the following chapter will explore this will a detailed discussion of the theoretical and practical implications of the research.

Chapter 8: Implication and Recommendations

8.1 Introduction

The biopsychosocial model has presented a wealth of information regarding the relationship between various factors within the biological, psychological and sociocultural dimensions and the propensity to develop eating pathology, the limitations notwithstanding. The following discussion will present the fundamental implications and recommendations for future research that have been raised as a result of this investigation by systematically focusing on the theoretical and practical implication of the study. In addition, through the investigation there arose further possibilities and questions that were related to the present study and this has been presented in the recommended for future research section of this chapter.

8.2 Theoretical implications

This research focused on the multifaceted biopsychosocial model to explain the nature, course and aetiology of eating pathology in the South African context. Like anorexia nervosa and bulimia nervosa, non specified eating related pathologies are perceived as complex syndrome with multidimensional causes. Therefore, the implication of using the biopsychosocial model suggests that the propensity to develop eating related pathology arises from multiple factors that work interchangeable under the right circumstances to influence

the onset of the condition. Therefore, eating pathology develops out of a complex system of biological, psychological (personality and body perceptions) and sociocultural factors (gender). The biopsychosocial model directs attention to the realisation that the onset of eating pathology can be fully understood only in terms of their biological, psychological, and sociocultural parameters (Costin, 1999; DSM IV-TR, 2000).

This model is especially relevant in South Africa where the progressive urbanisation of life accompanied by the adoption of western ideology and lifestyle concerning values of attractiveness and beauty has resulted in increased life stressors and changing perceptions that has been linked to the increase of eating disorders (Lester & Petrie, 1998; Root, 1990). The biopsychosocial model is an effective model as it incorporates and addresses these variables under the umbrella of the biological, psychological and sociocultural factors that are closely related with the propensity to develop eating pathology.

It has been made apparent that all the influential factors implicated in the onset of eating pathology are interrelated and do not occur in isolation. Therefore this study has provided the impetus for the creation of a more comprehensive diagnostic evaluation and treatment strategy of individuals with eating related pathology, which will be expanded further in the next section.

Furthermore, this study has introduced a new understanding in the conceptualisation of eating pathology. For instance, by investigating a non clinical sample, the true nature of personality could be investigated with the absence of psychopathology interfering with the measurements. It is apparent that the non clinical sample presented support for enduring

personality traits prior to the onset of eating pathology. Therefore, it can be suggested that these naturally occurring personality traits observed in the present study (tense, apprehensive, sensitivity and suspiciousness) demonstrate a direct relation in predicting the propensity to develop eating pathology.

When assessing the role of body perceptions, it is necessary to consider that like their anorexic and bulimic counterparts, individuals with eating pathology are very distressed about their body shape and size (Adami, 2001; Benn-Tovim et al., 1990). Evaluating a non clinical sample revealed that negative perceptions of the body shape and size exist prior to the onset of the eating disturbance. Therefore, the significant relationship between weight and shape concern highlights the importance of broadening the understanding of eating pathology to include variables related to weight and shape concern, specifically negative self evaluation, as possible risk behaviours in the onset of dysfunctional eating practices and behaviours (Dunkley et al., 2001; Senekal et al., 2001; Benn-Tovim et al., 1990).

8.3 Practical implication

The practical implications of this study are essential for linking the research to real life situations of individuals with eating pathology. Firstly, the use and application of the biopsychosocial model reasserts the fundamental premise that clinicians adopt an eclectic approach by integrating aspects related to the biological, psychological (personality, body perceptions) and social factors (gender) into the treatment and diagnosis of eating pathology.

Consistent with the multidimensional nature of eating dysfunction, it is suggested that novel approaches to treatment be adopted and integrated into clinical training to assist the practitioner in expanding the capacity to respond to the changing needs of a diverse and multicultural population within South Africa.

Furthermore, investigating not specific eating pathology includes the majority of individuals who do not fit into a diagnostic category of eating disorders. In many cases, the availability of adequate treatment is ignored until full blown symptoms of eating disorders are observed. Since this study has highlighted the severity and multidimensional causes of general eating pathology, it is suggested that health care professionals as well as educators recognise the symptoms of dysfunctional eating and take decisive steps to help treat the individuals immediately instead of waiting for symptoms to meet the diagnostic category of eating disorders. Detecting these maladaptive beliefs systems and eating habits in the early stages of development may be fundamental in reducing the risk for developing eating disorders altogether (Calderon, 2006).

It is essential that all the tenets within the biological, psychological and social dimensions be considered when drafting a therapeutic preventative strategy for eating pathology. Furthermore, considering the multiple aetiological causes, it is suggested that multiple health care professionals (dietician, psychologist, medical doctor, psychiatrist, personal trainer etc.) be consulted in order to formulate an eclectic and comprehensive approach to the treatment of eating pathology. .

From a therapeutic point, the results of this study indicate that high levels of apprehension and tension are seen prior to the onset of eating pathology. It is proposed that subjects with eating dysfunction would benefit from learning new activities that would aid them to cope with anxiety and tension such as alternative healing, relaxation therapy and yoga. Furthermore, enabling young people at an early age through specially designed educational programmes at schools, with skills to effectively deal with negative emotions such as tension and apprehension will contribute to lessen the propensity to develop eating pathology. In addition, the general practitioner would benefit from specialised training into identifying the possible risk factors (personality, body dissatisfaction, gender) that make adolescence vulnerable to developing eating pathology.

With the increased prevalence of eating pathology in a non clinical sample, the issue of prevention must be addressed. It is a social responsibility to modify negative stereotypes of body size and shape that can contribute to the development of dysfunctional eating. Attempts at early detection must be undertaken with school students both males and females. Through early intervention programmes, schools need to focus on positive self evaluation, healthy nutrition, exercise and stereotypes about weight. These programmes need to be designed to directly target the negative perceptions about being overweight and present learners with favourable attitudes about obese people by influential characters (Stangor, Sechrist & Jost, 2001).

8.4 Recommendation for future research

- In future research, investigating the core beliefs and practices associated with eating pathology in younger children will aid in pinpointing the vulnerable tenets in the onset of eating dysfunction in children.

- It is recommended that research focusing on negative self evaluation and affect that develops from extreme weight and shape concerns may add additional value to the understanding of eating pathology and body perceptions.

- It is important to note that the sample was small and replication of findings with other non clinical samples is necessary therefore a large sample could allow for the investigation of multiple factors (age, family history of eating dysfunction, media, family, peers, race, gender, socio-economic class, dieting) in predicting the onset of eating pathology.

- In future research it would be beneficial to compare the personality traits and body perceptions of a non clinical sample of males with females and investigate the related influence on the propensity to eating related pathology.

- The role of urban versus rural settings will shed further insight on the degree of influence that western ideology and culture has in perpetuating and maintaining eating related pathology.

- In addition, it has been raised that binge eating is linked to obesity in early childhood. Therefore it would be beneficial to focus on obesity and eating related disorders in early childhood. The sample would comprise of obese and non obese children and measure the extent of disordered eating through eating disorder measurements will establish whether binge eating is relates to the onset of obesity.

- Related to the research it would be beneficial to investigate the relationship between anorexia nervosa, bulimia nervosa and EDNOS to determine whether these categories are distinct as outlined by the DSM IV-TR (2000) or whether these disorders occur on a continuum.

- Instead of interviews and questionnaires, case studies and narratives would provide a more comprehensive analysis of eating pathology. For instance, allowing participants to keep a journal will provide a more detail account of the extent and experience of the eating dysfunction.

- It would also be interesting to investigate EDNOS. The similar measures (EDI, EAT-26, 16PF) as well as a comprehensive interview schedule will be used to provide additional information into the nature of the condition.

- One could also use different personality test (Minnesota Multiphasic Personality Inventory, Jung Personality Questionnaire and California Personality Inventory) to assess personality traits in individuals with a propensity to develop eating related pathology.

- Furthermore, it would be beneficial to use other measure of binge eating disorder like the Binge eating scale (BES), the Eating Disorder Examination Questionnaire (EDE-Q-I), the Questionnaire for Eating and Weight Patterns-Revised (QEWP-R) or the Eating Disorder Examination (EDE) to assess the propensity to develop binge eating disorder

- It will of interest to assess comorbidity and the propensity to develop eating related disorder. For example, the degree of anxiety and affective disorders related to the severity of eating pathologies will shed further light on possible triggers in the onset of eating pathology. .

- It would be useful to evaluate the development of negative stereotypes of weight and whether these contribute to the development of eating disorders.

- It would be important to compare the personality traits and body perceptions of binge eating disorder with anorexia nervosa and bulimia nervosa to assess whether binge eating is a distinct and separate eating pathology or whether it occurs at the extreme end of the eating disorders.

- It will be further beneficial to conduct the research outside of the university environment in order to be able to generalise the results across different settings.

- It is important to understand the nature of binge eating disorder and bulimia nervosa non purge subtype and determine the degree of relationship between the two eating pathologies so that effective treatment and therapeutic interventions can be developed and implemented.

8.5 Conclusion

The fundamental objective of the research was the evaluation of personality and body perceptions in individuals with a propensity to develop eating pathology. It appears that the overall findings of the research have added to the literature on eating related pathology, evident by the implication and recommendation of the results. Therefore it is necessary to conclude with a summary of this research that has added additional merit to the role of personality and body perception that influence the propensity to develop eating pathology.

Concluding comments

According to Schaffner (2001) the biopsychosocial model is the rational answer that accommodates the complexities of a multi dimensional, holistic factor. This has been demonstrated in the present study by the incorporation of a multidimensional model to explain the development of eating pathology. The biopsychosocial model of eating pathology provided the framework for the conscious recognition of the intertwined complexity of the biological, psychological and social aspects that interact to significantly influence the development of the condition. All the variables are linked and work in conjunction to predispose students to develop eating pathology. Carrio et al. (2004) proposed that Engel supported a holistic alternative to explaining phenomena. Therefore, it is suitable to mention that the holistic view is apparent where the tenets within the biological, psychological and social dimensions work in conjunction to elucidate the propensity of student's to develop eating pathology.

Within the sociocultural model, the influence of gender was investigated and appears to play an important role in predisposing individuals to develop eating pathology. The primary aim of this study was focused on the psychological tenets of personality and body perceptions in the development of eating pathology. From the analysis of the EAT-26, EDI and 16 PF, the results of the correlations demonstrate that apprehension (factor O), tension (factor Q4), suspicious (factor L) and sensitivity (factor I) personality traits are related to the onset of eating pathology. Furthermore, possible multiple regression predictor of eating pathology according to the EAT-26 was apprehension (factor O) and the EDI revealed that both

apprehension (factor O) and tension (factor Q4) in conjunction predict the onset of eating dysfunction. Furthermore, the psychological factor of body dissatisfaction appears to play a decisive role in the onset of eating pathology.

Therefore, the discussion has revealed that in order to fully understand the complex development of eating pathology, it is necessary to focus on a multidimensional understanding of the construct. In essence, the findings of this study appear to suggest that the propensity to develop eating pathology is reliant on the combination of various factors within the biological, psychological and sociocultural dimensions that work under the right circumstance to influence the development of the condition.

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APPENDIX

Appendix A, B C

Eating Disorder Diagnostic Criteria from DSM IV-TR

Anorexia Nervosa
* Refusal to maintain body weight at or above a minimally normal weight for age and height, for example, weight loss leading to maintenance of body weight less than 85% of that expected or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected.
* Intense fear of gaining weight or becoming fat, even though underweight.
* Disturbance in the way one's body weight or shape is experienced, undue influence of body weight or shape on self evaluation, or denial of the seriousness of the current low body weight.
* In postmenarcheal females, amenorrhea, i.e., the absence of at least 3 consecutive menstrual cycles. A woman having periods only while on hormone medication (e.g. estrogen) still qualifies as having amenorrhea.

Type
Restricting Type: During the current episode of Anorexia Nervosa, the person has not regularly engaged in binge-eating or purging behavior (self-induced vomiting or misuse of laxatives, diuretics, or enemas).
Binge Eating/Purging Type: During the current episode of Anorexia Nervosa, the person has regularly engaged in binge-eating or purging behavior.

Bulimia Nervosa
* Recurrent episodes of binge eating characterized by both
1. Eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances.
2. A sense of lack of control over eating during the episode, (such as a feeling that one cannot stop eating or control what or how much one is eating).
* Recurrent inappropriate compensatory behavior to prevent weight gain, such as selfinduced vomiting, misuse of laxatives, diuretics, enemas, or other medications, fasting, or excessive exercise.
* The binge eating and inappropriate compensatory behavior both occur, on average, at least twice a week for 3 months.
* Self evaluation is unduly influenced by body shape and weight.
* The disturbance does not occur exclusively during episodes of Anorexia Nervosa.

Type
Purging Type: During the current episode of Bulimia Nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.
Nonpurging Type: During the current episode of Bulimia Nervosa, the person has used other inappropriate compensatory behavior but has not regularly engaged in selfinduced vomiting or misused laxatives, diuretics, or enemas.

Eating Disorder Not Otherwise Specified

This diagnosis includes disorders of eating that do not meet the criteria for the above two eating disorder diagnoses. Examples include

1. For female patients, all of the criteria for Anorexia Nervosa are met except that the patient has regular menses.
2. All of the criteria for Anorexia Nervosa are met except that, despite significant weight loss, the patient's current weight is in the normal range.
3. All of the criteria for Bulimia Nervosa are met except that the binge eating and inappropriate compensatory mechanisms occur less than twice a week or for less than 3 months.
4. The patient has normal body weight and regularly uses inappropriate compensatory behavior after eating small amounts of food (e.g., self-induced vomiting after consuming two cookies).
5. The patient engages in repeatedly chewing and spitting out, but not swallowing, large amounts of food.
6. Binge-eating disorder: recurrent episodes of binge eating in the absence if regular inappropriate compensatory behavior characteristic of Bulimia Nervosa.

Adapted from American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, 4th ed, text rev.
Washington, DC, American Psychiatric Association, 2000.

Listed in the DSM IV-TR appendix as a diagnosis for further study, **Binge Eating Disorder** is defined as uncontrolled binge eating without emesis or laxative abuse. It is often, but not always, associated with obesity symptoms. Night eating syndrome includes morning anorexia, increased appetite in the evening, and insomnia. These patients can have complete or partial amnesia for eating during the night.

Appendix D: Demographic Section (due to copyright the 16pf, EAT26 and EDI was not included)

1, Age

17	**18**	**19-21**	**22-25**	**25-57**

2. Race

White	**Black**	**Coloured**	**Indian**	**Other**	

3. Gender

M	**F**

4. Socio economic status of mother

1	**2**	**3**	**4**	**5**	**6**

5. Socio economic class of father

1	**2**	**3**	**4**	**5**	**6**

Appendix E: Interview Schedule

1. **Describe your personality**
2. **How do others describe your personality**
3. **What is your attitude towards eating**
4. **Describe a binge**
5. **How do you feel before during and after a binge,**
6. **How do you feel about your body shape and size.**
7. **Who influenced your eating habits**
8. **What type of personality traits define you**
9. **Which part of your body would you most change,**
10. **Are you receiving support, what type.**

Appendix F and G: Information and Consent letters

Information Sheet.-Questionnaire

Investigate personality and body perception of student with propensity to develop binge eating disorder

Researcher
Saintha Maistry
717 4613
Saintha.maistry@wits.ac.za

Supervisor Adilia Silva

I am a MA student at the University of the Witwatersrand. I am studying the **personality and body perception of student with the propensity to develop binge eating disorder**

As part of my study, I asking students to complete a questionnaire pack comprising of three questionnaires, the EAT-26, EDI and the 16PF. The questionnaires will focus on personality traits and attitudes and behaviours around eating. Those identified with high scores on the EAT-26 and EDI will be invited to participate in an interview

You are receiving this questionnaire pack because you are a registered student studying at Wits.

I am inviting you to take part in this study and would value your input as a role player in the perform arts industry. However, participation is entirely voluntary.

Please complete the attached questionnaire pack that I will e-mail to you and return it to the email address specified on the cover page of the questionnaire. Other contact information, as well as the deadline for the return of questionnaires is also specified on the cover page. Please contact me if you have any questions or if you would like to have an extension of the deadline.

It should take you no more than 30 minutes to complete the questionnaires.

Only I, Saintha Maistry, will have access to the completed questionnaires. All information will be kept in confidence. Any discussion of the results will not refer to you by name or provide any identifying information. All the data will be stored on a secure and password protected computer disk to which only I have access.

There are no risks involved in this study. I hope that the ultimate results of this study will help develop new models for healthy weight management that goes beyond the current public health response of calorie counting and food restriction to promote healthy weight management.

If you feel in any way distressed upon completion of this questionnaire pack, the researcher has arranged free counselling support services at the CCDU.

You may choose not to complete this questionnaire. You may choose not to answer a question. You may choose to withdraw your questionnaire from this study at any time.

Your information will be processed and interpreted and will be presented as part of a collective group response within my MA thesis. I also forsee that one or two articles, published in academic journals will report on this information,

Interview

Investigate personality and body perception of student with propensity to develop binge eating disorder

Researcher
Saintha Maistry
717 4613
Saintha.maistry@wits.ac.za

Supervisor Adilia Silva

I am a MA student at the University of the Witwatersrand. I am studying the **personality and body perception of student with the propensity to develop binge eating disorder**

I am inviting you to take part in this interview. It will last for no more than one hour, during which time we will explore more in-depth the components of the above topic, I will act as the facilitator, introduce leading questions as the starting point. The time and venue for the discussion will be decided based on mutual convenience.

The discussion will be tape recorded. I will transcribe the tape recording,

Only I, Saintha Maistry, will have access to the tape recordings and transcriptions. All information will be kept in confidence. Your name will not appear on the transcripts. Any discussion of the results will not refer to you by name or provide any identifying information. All the data will be stored on a secure and password protected computer disk to which only I have access.

There are no risks involved in this study. I hope that the ultimate results of this study will help develop new models for healthy eating attitudes. As such, the study may ultimately, benefit dietetic (dieting) subgroups with new alternative non diet models to healthy weight management.

If you feel in any way distressed during the discussion, the researcher has arranged for free counselling support services at the CCDU.

You may withdraw from the discussion at any time. You may choose not to answer a question. You are free to expand on a topic or talk about related ideas. You may ask to review the transcripts of the tape recordings before i begin to interpret the data.

Your information will be processed and interpreted and will be presented as part of my MA thesis. I also forsee that one or two articles, published in academic journals will report on this information,

Participation Agreement

I .....know that my participation in this interview is voluntary. If for any reason, at any time, i want to withdraw from the discussion, I may do so without having to give an explanation. The researcher has explained the aims and nature of this study to me. I understand what I will be asked to do. I am aware the data will used for a MA study. I have the right to review and comment on transcripts of the discussion before the researcher processes the data. I know that the data gathered in this study are confidential and anonymous with respects to my personal identity.
I grant permission for the use of this information for the purposes explained above.
I have read the above form and with the understanding that I can withdraw at any time and for whatever reason, i consent to participant in today's group discussion.

.....
Signature .....
Date

.....
Interviewer signature

Recording Consent

I.....hereby acknowledge that I have read the information sheet and consent form for participating in the interview for the above study.

I hereby confirm my willingness to participate. I also agree that my responses during the discussion may be tape recorded. I give permission for my responses to be used in this study. However, I will not be identified and no information leading to my identification will be made available. All data (recording and transcripts) will be stored securely.

....

Participate signature Date

Appendix H: Ethical Clearance letter

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Academic and Research)

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R 14/49 Maistry

CLEARANCE CERTIFICATE **PROTOCOL NUMBER H040904**

PROJECT TITLE Personality and Body Perceptions of Students with a Predisposition to Developing Binge Eating

INVESTIGATORS Ms S Maistry

SCHOOL/DEPARTMENT Human & Comm Development/Psychology

DATE CONSIDERED 04.09.29

DECISION OF COMMITTEE* Approved unconditionally

This ethical clearance is valid for 2 years and may be renewed upon application

DATE 04.10.25 **CHAIRPERSON** _____
pp **(Professor MC Penn)**

* Guidelines for written "informed consent" attached where applicable

cc Supervisor: Ms A Silva

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **one copy** returned to the Secretary, Room 100015, 10th floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorised to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure be contemplated from the research procedure, as approved, I/we undertake to submit a revised protocol to the Committee.

I/we agree to submit a yearly progress report.

This ethical clearance will expire on

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES