

**TOWARDS THE CROSS-CULTURAL VALIDATION OF THE
EATING DISORDERS INVENTORY: A PILOT STUDY**

**Submitted in partial fulfillment of the requirements for the degree of Master of Social
Science (Clinical Psychology) in the School of Psychology at the University
of KwaZulu Natal, Pietermaritzburg.**

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October 2004

Abstract

Eating disorders were predominantly perceived to be a white, Western higher socio-economic phenomenon. However, as Western cultural values have been embraced, eating disorders appear to have become prevalent across racial, ethnic and socio-economic groups. In the last decade there has been an increased interest in assessing eating disorders from a cross-cultural perspective. Many studies have been conducted in the United Kingdom and the United States of America. Relatively few empirical studies have been conducted in South Africa. The Eating Disorders Inventory (EDI) is an instrument that has been used in eating disorder research and is known to be reliable and valid. Although the EDI has been used in South Africa, its cross-cultural validity has not yet been determined. The purpose of this research is a pilot cross-cultural validation of the EDI to determine if this design would be appropriate for a large-scale validation project.

Acknowledgements

I would like to extend my grateful thanks

to my supervisor Dr Doug Wassenaar for his enthusiastic support and constant guidance throughout the course of this thesis,

to Alistair Van Heerden for assisting with the statistical analysis

and

to my parents for their support and encouragement.

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CHAPTER 1

INTRODUCTION

The aim of this introductory chapter is to provide a context and rationale for the pilot cross-cultural validation of the Eating Disorders Inventory (EDI) (Garner & Olmstead, 1984).

1.1 DISORDERED EATING ACROSS CULTURES

Eating disorders were originally thought to be predominantly Western phenomena. However, the literature has shown that this is no longer the case. Eating disorders appear to have become a growing problem and “occur across a much broader age, race and socioeconomic distribution than previously suspected”(Wilfley, Schreiber, Pike, Striegel-Moore, Wright & Rodin, 1996, p. 377). However, recent literature reveals that eating disorders are no longer bound to a particular culture or socio-economic group. Eating disorders are prevalent in several countries including China, India, Malaysia, the Philippines and Indonesia (Efron, 1997; Vaidyanathan, Rodell & Cleminson 1998; Waterson, 2000 as cited in Nasser, Katzman & Gordon, 2001).

The increase in eating disorders worldwide has raised awareness and interest in eating disorders research and the necessity for instruments that are cross culturally applicable and valid and that will be effective in assessing eating pathology.

1.2 RATIONALE FOR A VALIDITY STUDY

The EDI is an instrument that has been used extensively in research exploring eating disorders (Garner & Olmsted, 1984). However, there are some shortcomings to using the EDI. Firstly the EDI may present unfair advantage to certain candidates. Furthermore, results may have false positives or false negatives where the EDI is used in eating disorders research amongst South Africans (Durrheim, 1999). A reason for this is that the EDI “was validated within a Western culture and therefore, it cannot be assumed that it’s validity extends to cross-cultural applications”(Hooper & Garner, 1986, p. 165-166).

For example, Lee, Lee and Leung (1998) attempted to determine the validity of the EDI with a Chinese population. However, some of the subscales in non-fat phobic patients reflect the ethno-specific constructs on which the EDI is based. This weakens the efficacy of the EDI as a screening instrument for eating disorders in the Chinese population.

Although the EDI has been used in eating disorders research in South Africa (Marais, Wassenaar & Kramers, 2002; Wassenaar, le Grange, Winship & Lachenicht, 2000), there has been no research to date attempting to validate the EDI across black, Asian, coloured and white groups. The validity of the EDI in South Africa therefore remains in question. A pilot validation study is vital to establish whether the EDI can be used with confidence in South Africa.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The purpose of this chapter is to provide an overview of the literature on the topic of eating disorders and to identify the gap that exists in cross-cultural validation of the Eating Disorders Inventory (EDI) in South Africa.

2.2 DEFINITIONS

The following section highlights some of the key terms that will be referred to in the study. These key terms are essential to a more in-depth understanding of the research undertaken. These terms include: validity, reliability, eating disorders and cross-cultural.

2.2.1 Validity

Validity refers to a test or research instrument's ability to measure what it was intended to measure and this should be done with accuracy (Durrheim, 1999). The different types of validity will be discussed below.

- Content validity is “established by determining the extent to which a measure reflects a specific domain of content” (Durrheim, 1999, p. 85).
- Face validity refers to what the instrument appears to measure on initial surface analysis. This however, is not necessarily indicative of what the instrument measures in reality (Foxcroft & Roodt, 2001).
- Construct validity “involves both a theoretical and empirical task of determining the extent to which a measure of a construct is empirically related to other measures with which it is theoretically related” (Durrheim, 1999, p. 87).
- Criterion related validity “is the degree to which a measure is related to some other standard or criterion that is known to indicate the construct accurately” (Durrheim, 1999, p. 83). There are essentially two types of Criterion related validity. Firstly, predictive validity “is established by determining the ability to predict future events that are logically related to

the construct” (Durrheim, 1999, p. 85). Secondly, concurrent validity measures “the degree to which a new instrument is related to a pre-existing construct” (Durrheim, 1999, p. 85).

Concurrent validity will be used in this research project to explore the relationship between the EDI scores and a clinical interview, in order to determine if there is a match between the two and to determine if this is a viable design for a large-scale validation research venture.

2.2.2 Reliability

Reliability refers to the consistency of an analytical tool to measure what it is designed to measure. There are five types of reliability. These are test-retest, alternate form, split half, Kuder-Richardson and Coefficient Alpha, and interscorer reliability.

- Test-retest reliability is determined by administering the measure twice to the same group of test-takers. The reliability is determined by the correlation between the first and second applications of the measure.
- Alternate form reliability is a method by which two equivalent forms of the same measure are administered to the same group on different occasions.
- Split-half reliability is obtained by splitting the measure into two equivalent halves and computing the correlation between the two sets of scores.
- Kuder-Richardson and Coefficient Alpha reliability are coefficients of internal consistency. Item statistics rather than part or total scores are used as the basic form of measurement and “the result is a reliability estimate which is equivalent to the average of all the possible split-half coefficients” (Burns, 2000, p. 343).
- Inter-scorer reliability can be determined by having all test-takers test protocols scored by two assessment practitioners (Foxcroft & Roodt, 2001).

Although this study is not a test of reliability, the EDI does appear to have internal consistency and test-retest reliability (see Section 2.15.). There also appears to be a high degree of internal consistency across subscales in two previous studies

conducted in South Africa by Marais et al. (2002) and Wassenaar et al. (2000) (Section 4.1.3.).

2.2.3 Eating disorders

According to Augestad and Flanders (2003, p.12) “Eating disorders are characterized by serious disturbances in eating, such as restriction in intake or bingeing, as well as distress or excessive concern about body shape or body weight. In addition to their effect on psychological well-being, they have a potentially devastating effect on health through the physiological sequelae of altered nutritional status or purging.”

According to the Diagnostic and Statistical Manual- IV (DSM-IV) (American Psychiatric Association, 2000) both anorexia nervosa (the pursuit of thinness by self-starvation that results in a range of degrees of emaciation) and bulimia nervosa (purging of food usually after an episode of binge eating) are both classified as eating disorders. Binge-eating disorders and EDNOS are also listed and will be described briefly below.

Anorexia nervosa is described in the DSM-IV (American Psychiatric Association, 2000) as having four distinguishing characteristics:

- A. Refusal to maintain body weight at or above a minimally normal weight for age and height.
- B. Intense fear of gaining weight or becoming fat, even though underweight.
- C. A distorted experience of body weight and shape (for example, the individual feels globally fat or believes that certain parts of the body are too, even when obviously underweight).
- D. In postmenarchal females, amenorrhea i.e., the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen administration).
In addition the person may or may not engage in binge eating and purging behaviour.

Bulimia nervosa is described as recurrent episodes of bingeing. The DSM-IV (American Psychiatric Association, 2000) cites four distinguishing characteristics:

- A. Recurrent episodes of binge eating. An episode of binge eating is characterised by both of the following:
 - (1) Eating at discrete periods, within 2-hour periods and the food that is eaten at these times is definitely larger than the amounts that are normally eaten by people under similar circumstance.
 - (2) They have a sense of a lack of control over their eating during these episodes.
- B. Recurrent inappropriate compensatory behaviours in order to prevent weight gain. This may be self-induced vomiting or the misuse of laxatives, enemas, or other medication. They may also engage in fasting or excessive exercise.
- C. The binge eating and inappropriate compensatory behaviours both occur, on average, at least twice a week for 3 months.
- D. Self-evaluation is unduly influenced by body shape and weight.
- E. The disturbance does not occur exclusively during periods of anorexia nervosa (American Psychiatric Association, 2000).

The criteria for Binge-Eating Disorder as described by the American Psychiatric Association, (2000), are as follows:

- A. Recurrent episodes of binge eating. An episode is characterised by both of the following:
 - (1) Eating, in a discrete periods of time (e.g., within any 2 hour period), an amount of food that is definitely larger than most people would eat in a similar period of time under similar circumstances
 - (2) A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating)
- B. The binge eating episodes are associated with three (or more) of the following:
 - (1) Eating much more rapidly than normal
 - (2) Eating until feeling uncomfortably full
 - (3) Eating large amounts of food when not feeling physically hungry
 - (4) Eating alone because of being embarrassed by how much one is eating
 - (5) Feeling disgusted with oneself, depressed, or very guilty after overeating
- C. Marked distress regarding binge eating is present

- D. Binge eating occurs, on average, at least 2 days a week for 6 months.
Note: the method of determining frequency differs from that used for bulimia nervosa.
- E. The binge eating is not associated with the regular use of inappropriate compensatory behaviours (e.g., purging, fasting, excessive exercise) and does not occur exclusively during the course of anorexia nervosa or bulimia nervosa.

The presentations of eating disorders may be quite diverse and variable and may not fit the criteria of anorexia, bulimia nervosa or binge eating disorder. Eating Disorder Not Otherwise Specified (EDNOS), is an additional category which has been added for disorders of eating that do not meet the criteria for any specific eating disorder.

Examples include:

- (1) For females, all of the criteria for anorexia nervosa are met except that the individual has regular menses.
- (2) All of the criteria for anorexia nervosa are met except that, despite significant weight loss, the individual's current weight is in the normal range.
- (3) All of the criteria for bulimia nervosa are met except that for binge eating inappropriate compensatory mechanisms occur at a frequency of less than twice a week or for duration of less than 3 months.
- (4) The regular use of inappropriate compensatory behaviour by an individual of normal body weight after eating small amounts of food (e.g. self-induced vomiting after eating two cookies).
- (5) Repeated chewing and spitting out, but not swallowing, large amounts of food.
- (6) Binge-eating disorder: recurrent episodes of binge eating in the absence of the regular use of inappropriate compensatory behaviours characteristic of bulimia nervosa (American Psychiatric Association, 2000).

2.2.4 Culture, culture bound syndrome and acculturation

Culture is a difficult concept to define. It is dynamic and continually changing (Smith, 2000). Hahn, (1994), defines culture as "the set of beliefs, rules of behaviour, and customary behaviours maintained, practiced and transmitted in a given society" (p. 42). Culture is the study of the everyday lives of people, "their rituals, family

structures, courtship patterns, gift relationships, the transition of childhood to adulthood and old age” (Smith, 2000, p. 21). When we study cultures we are made aware of how different our culture is and the things we take for granted are illuminated (Smith, 2000). The traditional humanities approach to culture differs somewhat from the anthropological definition. There is an evaluative approach to culture that embraces the belief that some cultures are better than others. It assumes that culture opposes the prevailing social order or “civilization” and as a result, it proposes that harmony between culture and society is possible, but rarely achieved. There is the belief that culture can easily be lost and must be carefully preserved in museums and libraries, that it is something sacred and thus removing it from everyday experience (Griswold, 1994).

A culture-bound syndrome suggests that syndromes may be bound by a culture. In order to better understand this concept, the notion of syndrome will be briefly defined in order to suggest how it may be bound within the constraints of a particular culture. A syndrome is a group of signs and/or symptoms, physical and/or mental that are generally pathological. A syndrome is considered cultural-bound if particular cultural conditions are necessary for occurrence of the syndrome (Hahn, 1994). In other words, the signs and symptoms associated with a disease such as eating disorders and have distinctive psychological features of that culture (Nasser, Katzman & Gordon, 2001).

Acculturation refers to the changes that occur in a cultural system due to contact with and merging with another cultural system. Although acculturation should be a bi-directional process, it is usually stronger in one direction, the dominant culture having a greater influence on the traditional culture (Herskovits, 1958). Acculturation may predispose individuals to psychological distress as they adjust to the changes imposed by the dominant culture (Berry, 1980 as cited in Marais et al., 2002). The outcomes of acculturation according to Berry (1997) are as follows: Integration, Assimilation, Separation and Marginalisation (Berry, 1997 as cited in Marais et al., 2002). Acculturation stress may predispose an individual to eating disorders as they are pressured to adopt the Western values of thinness as a sign of beauty and success and in the process lose connection to themselves and others in their community (Nasser, 1997 as cited in Marais et al., 2002).

2.3 A GLOBAL OVERVIEW OF EATING DISORDERS

Relatively few empirical studies of eating disorders have been conducted in South Africa. Comparatively, many more studies have been conducted in the United Kingdom and the United States of America where the EDI was published and validated. There has however, in the last decade been an increased interest in assessing eating disorders from a cross-cultural perspective. A great deal of research has been conducted amongst the Chinese population by Lee et al. (1998). There is also an increase in literature published in South Africa as well as America (Edwards, d'Agrela, Geach & Welman, 2003; le Grange, Telch & Agras, 1997; Hooper & Garner, 1986; Marais et al., 2002; Nasser et al., 2001; O' Neill, 2003; Tsai & Gray, 2000; Wassenaar et al., 2000; White, Kohlmaier, Varnado-Sullivan & Williamson, 2003).

2.4 A FEMINIST PERSPECTIVE ON EATING DISORDERS

The last two decades have seen a paradigm shift within feminist thought. This needs to be contextualized within shifts in the "social organisation of Western societies, the impact of globalisation, technology and digital communications, and the environmental/biological risks and hazards." As a result, women's "needs" and "desires" are now coupled with "anxiety" (O'Neill, 1999, p. 6).

Their anxiety is related to their multiple roles. Orbach and Eichenbaum (1987) write about the challenges of the liberated woman, who is professionally defined. These women face many additional stresses in their lives and often question the options they have in the system that directs them. There is a new "wave of isolation they feel; guilt about not being with our children or partners enough; envy of the success of other women; anxieties that arise when making the decision about whether to read a journal article or relax and read a novel" (Orbach & Eichenbaum, 1987, p. 170). These changes in women's traditional roles have added to their role overload, where in the past woman's bodies were perceived as their asset needed to find a partner and secure her position as a wife and a mother (Eichenbaum & Orbach, 1992). Now women are liberated individuals who must compete in a male world (Griffin & Berry, 2003).

It is argued that women often use their body as a vehicle through, which they show their distress and conflicts. Drawing on psychodynamic theories, feminist theorists provide explanations of how the mother-daughter relationship is implicated in their daughters' anorexia. An anorexic woman is denying herself food in an attempt to split off the painful experiences she feels. In this way, she rejects the needing, yearning, "hungry needy little girl" part of herself which she denies and represses (Bordo, 1992, p.108 as cited in Malson, 1998, p. 96). This originates from the contradictory messages she receives from her mother-that she must deny her feelings if she is to get love and approval (Eichenbaum & Orbach 1983 as cited in Malson, 1998).

Modern technology and the media perpetuate this iconically thin body image as the ideal. This ultra-thin ideal beauty image is almost impossible for the average woman to achieve. Thinness is perceived as the ideal, as it symbolises self-control and displays the ability to delay gratification. These are essential qualities if one is to compete in a male dominated world (Eichenbaum & Orbach 1992). The media however is full of paradoxes and contradictions regarding food and its consumption. Dieting and the pursuit of thinness are encouraged. However, simultaneously, decadence and indulgence in food for pleasure are also encouraged. A paradox exists, self-starvation amidst abundance (Griffin & Berry, 2003).

2.5 EATING DISORDERS ACROSS CULTURES

The apparent uniqueness of Eating Disorders to Western societies led to the belief that these syndromes are culture-bound (Prince, 1983,1985 as cited in Nasser et al., 2001). Nasser et al. (2001) however state that according to global literature it appears that eating disorders are no longer unique to Western societies. Prince (1985) suggested that as Western cultural norms became more influential around the world, countries such as Japan, which were previously thought to be immune, are now affected. Eating disorders were predominantly reported in Europe and North America, with the exception of Japan and Chile (Nasser et al., 2001). After the 1990's, however, there was an increase in eating disorders reported in "Hong Kong and mainland China, South Korea, Singapore, South Africa, Nigeria, Mexico, Argentina and India" (Nasser et al., 2001, p. 4). This information is based on case studies. There are no known epidemiological studies documenting these trends. Although these are mainly

observational discoveries, eating disorders appear to have become a global phenomenon affecting countries that were previously unaffected.

Earlier research seemed to indicate that white women tended to have a higher drive towards thinness compared to their black counterparts (Wilfley et al., 1996). Hooper and Garner (1986) suggested that these differences could be attributed to the traditional notion of plumpness as a sign of strength and prosperity. Traditional Zimbabwe society perceived fatness as neither unhealthy nor unattractive but rather a sign of success (Hooper & Garner, 1986). Edwards et al. (2003) propose that black people have not valued the slimness ideal of the West but embraced plumpness as the female body image beauty ideal. As a result, they appear to have “less social pressure about their weight and more positive attitudes about overweight” (Wilfley et al., 1996, p. 378). Studies reveal that African American women also have lower levels of body dissatisfaction and larger body image ideals than their white counterparts. There is also some evidence that body image is influenced by socio-economic status and that women of low socio-economic status have lower body image ideals than women of higher socio-economic status (O’Neill, 2003). Black women in comparison appeared to have more psychological factors associated with eating disorders. A study conducted by Hooper and Garner (1986, p.166) applying the EDI to a sample of black, white and mixed race schoolgirls in Zimbabwe confirmed these findings. “The black group consistently scored higher on the truly psychological dimensions of the EDI, notably interpersonal distrust, perfectionism, interoceptive awareness, and maturity fears, their scores were lower on the drive for thinness subscale.”

2.6 ACCULTURATION

Acculturation is “the adoption by an individual or a group of the cultural patterns of another group; a process of social change caused by the interaction of significantly diverse cultures” (Barnhart & Barnhart, 1983, p. 15). Youth in particular are being affected by Western ideals of thinness that appear to be associated with an increase in status. According to Hooper and Garner (1986), although there appears to be a level of acceptance of being fat in affluent black society compared to their white counterparts, it is only a matter of time before the pressure to conform to the Western ideals of thinness will be embraced. Kramers (2000) obtained partial support for the

hypothesis that acculturation phenomena are associated with eating disorders. Individuals who either assimilate the dominant culture or reject it appear to be more at risk of developing eating disorders. Although the causative factors were not directly examined, “it is likely that acculturative stress and the adoption of achievement-orientated values account for the greater degree of risk for eating disorders in individuals who choose assimilation and rejection strategies”(Kramers, 2000, p.97).

Hooper and Garner (1986) offer a possible explanation for the high scores on the psychological scales of the EDI amongst black schoolgirls in Zimbabwe. They proposed that with the process of acculturation there are growing demands on black youth to perform equally well as their white peers in a highly competitive educational environment. In the light of this finding, it is likely that accompanying these expectations comes the fear of failure.

Coupled with liberation and equality come extensive choices and opportunity. Women are particularly vulnerable as there are additional pressures to achieve educationally and have a public role in life. As a result, women may be struggling with identity crisis and role overload. The process of acculturation brings with it subsequent breakdown in traditional structures (Nasser et al., 2001).

As predicted by Hooper and Garner (1986), there appears to be an increase in eating disorders in societies undergoing acculturation. A recent study conducted by Wassenaar et al. (2000) revealed significant eating pathology in South African women across diverse ethnic groups. The results indicated significantly higher scores on the *Drive for Thinness* subscale of the EDI as well as associated eating disorders in all three groups (blacks had the highest mean score followed by whites). As the Western ideals of thinness are embraced, these young women appear to be more at risk of developing eating disorders (Wassenaar et al., 2000).

According to Hooper and Garner (1986) black students also scored particularly high on the EDI subscales *Perfectionism* and *Maturity Fears*. It seems that the pressure and stress to achieve in the new culture has not been alleviated. Although it may appear that Western cultural norms have been accepted, the pressure to achieve and the fear

of failure accompanied by feelings of insecurity and instability appear to be prevalent in these young people's lives.

Although the early literature revealed marked differences in body image ideals amongst black and white subjects, there appears to be little difference in binge eating disorders among white American women and Afro American women (Nasser et al., 2001; Wilfley et al., 1996).

Thus far, eating disorder differences have been discussed with reference to black and white subjects in Africa and America. However, eating disorder research has become an area of interest in Asian societies such as Japan, Singapore, Taiwan, and the Republic of Korea. Eating disorders appear to have escalated with increased economic growth and seems to be a growing problem in low-income groups (Nasser et al., 2001). There seems to be an increase in eating disorders in countries which were previously unaffected, including China, India, Malaysia, the Philippines and Indonesia (Efron, 1997, Vaidyanathan et al., 1998, Waterson, 2000 as cited in Nasser et al., 2001). Although women in these countries are thin compared to Western standards, there appears to be an increase in eating disorders that warrants concern. In Hong Kong alone, 3-10% of young females are suffering from disordered eating, indicating a health risk (Nasser et al., 2001).

A study conducted by Lee, Lee, Leung and Yu (1997) using the Chinese EDI (the original EDI translated into Cantonese Chinese) revealed significant differences when compared to Canadian female subjects (The EDI was initially standardised on Canadian female subjects) (Garner & Olmstead, 1984). "*The Maturity Fears (MF), Ineffectiveness (I) and Interpersonal Distrust (ID) subscales were higher, whereas the Perfectionism (P) and Drive for Thinness (DT) subscales were lower in Chinese subjects*" (Lee et al., 1997, p.193). Lee et al. (1997) suggest some explanations for these findings by considering Chinese culture. Although Chinese subjects were inclined to feel fat, they were not as driven as the Canadian sample to lose weight or to engage in excessive weight control behaviour. The Chinese sample appeared to have the highest scores on the psychological subscales as was also evident in the earlier Zimbabwean study by Hooper and Garner (1986). Chinese families frequently have highly cohesive child-parent relationships where strong intergenerational

dependence is valued. The fear of maturing and entering the adult world of independence and autonomy was reflected in the high *Maturity Fears* subscale. Chinese society values self-effacement and believes in fatalism. They also embrace the concept of community rather than the individual. The high scores on the *Ineffectiveness* scale may reflect feelings of lack of control experienced by these subjects. The high *Interpersonal Distrust* scores may be a reflection of a society that discourages open expression of emotions and has rigidly prescribed social norms.

The traditional Western concept of the so-called fat phobia appears to be only one of the associated features of anorexia nervosa. The refusal to eat appears to be associated with psychological variables. Feminist writers such as Katzman and Lee (1997) suggest that anorexia nervosa has been portrayed as a disease in which women are lost in a world of fashion and stereotypical images of beauty, resulting in dieting to lose weight. This notion of eating disorders however, merely camouflages the real concerns women have and the symbolic meanings behind food refusal, which extend far beyond the mere iconic images portrayed in the media. Food refusal is a powerful tool to gain control in social positions where there is relative powerlessness (Nasser et al., 2001).

“Ma and co-workers (2000) identified five main themes of self-starvation in contemporary Hong Kong families that are relevant to treatment, namely, self-sacrifice for the family well-being, filial piety over individuation, bridging of parental conflict, expression of love or control, and camouflage of family conflicts. They noted that some of these themes were socially constructed in local Confucian culture” (Nasser et al., 2001).

2.7 NON-FAT PHOBIA ANOREXIA

The concept of non-fat phobia anorexia has become a common problem outside of the West and is affecting young females in Hong Kong, Japan, Singapore, Taiwan and Korea. It is well documented that anorexia nervosa is not a disease only of dieting to an extreme. However, there are many psychological indicators which result in the person becoming anorexic and emaciated. According to Nasser et al. (2001) the body is used as a vehicle to express internal distress. These non-fat phobic patients often

somatise. They attribute their emaciation to gastric bloating or to a loss of appetite (Lee et al., 1997). One of the criteria in the diagnosis of anorexia nervosa, according to DSM-IV (American Psychiatric Association, 2000), is an underlying fear of becoming fat (Nasser et al., 2001). These non-fat phobic women, as mentioned above have atypical anorexia nervosa that is devoid of the fear of becoming fat. This may result in them not being identified as anorexic which may delay them getting the treatment they require.

“Western community epidemiology surveys typically yielded a very low prevalence of anorexia nervosa” (Hsu, 1990 as cited in Nasser et al., 2001). One reason could be that all the screening instruments, including the EDI, are based on the notion of fat phobia, as a result subjects may not endorse items such as ‘I am terrified of gaining weight’ (#16) or ‘I am preoccupied with the desire to be thinner’ (#32) when they show extreme emaciation. A possible way to make the EDI more sensitive to the emaciated subject could be to use different idioms which are used by the starving subject to explain their food denial. It could contain items such as ‘I feel bloated after eating small amounts of food’, ‘I do not feel hungry any more’, ‘I have lost my appetite’, ‘food has lost its attraction for me’ (Lee et al., 1998, p.186).

It is important that cultural variables are taken into consideration when assessing eating disorders. Kleinman (1987) cautions researchers not to place too much emphasis on the DSM paradigm and in so doing neglect to take into account the cultural paradigm. Cases of non-fat phobia patients are sometimes diagnosed as atypical anorexia nervosa on psychometric instruments such as the EDI, as they have low scores on such instruments and are often dismissed as having ‘deceptive tendencies’ or ‘denial of illness’ (Lee et al., 1998 as cited in Nasser et al., 2001).

Patton and Szmukler (1995) indicated that an over- reliance on fat- phobia for the diagnosis of anorexia nervosa might result in the failure to recognise and diagnose eating disorders in broader cultural settings. They suggest that diagnosing anorexia nervosa using the narrow Western standards is not sufficient and there is a need to develop more appropriate local instruments (Nasser et al., 2001).

2.8 ANOREXIA DISGUISED BEHIND A RELIGIOUS FACADE

The rigid control of bodily urges, including that of hunger, began in the medieval church that preached renunciation of the body in order to come closer to the soul (Griffin & Berry, 2003). As a result, many women lived ascetic lives of self-discipline, totally denying their physical needs. Their denial of the body was a means to feel at one with Christ's suffering and reach a state of holiness. This form of self-starvation however may have served other purposes, enabling these women to feel empowered and gain autonomy in a predominantly patriarchal culture. Catherine of Siena was a nun who led an extraordinary life of self-denial. She would wear a hair shirt and chains. The predominant feature was her self-starvation. These women were persecuted and accused for their self-starvation that was perceived as undermining the church, the intermediary between themselves and God (Griffin & Berry, 2003).

As fasting is an acceptable religious practise even today, anorexia nervosa may reside under the guise of religious practise. It should be recognized that eating disorders might be a symptom of other underlying psychological needs of women, including their need for autonomy and acceptance in a predominantly patriarchal culture (Griffin & Berry, 2003).

2.9 CULTURAL PURGING PRACTISES

Cultural purging practises may play a part in false positive results for an eating disorder. Purging the body of unwanted impurities is a common practise in many cultures. Purgatives are medicines that are used to specifically flush the bowel out and are a method of cleansing oneself. These include emetics or medications to make one vomit or diuretics to increase the urine flow, enemas that clean the rectum and laxatives to stimulate evacuation of the bowel (Leclerc-Madlala, 2002).

In order to understand some of these practises it is helpful to look at the cultural beliefs, ideas and practises in more detail. Purging practises are particularly prevalent in South Africa amongst the Zulu people. They associate 'dirt' and specifically 'bodily dirt' with illness and disease. This may be caused naturally or supernaturally. Contamination exists on both planes. They use the metaphor of 'dirty' organs when referring to diseased organs. The belief exists that 'dirt' will eventually mix with the blood and result in more generalised illness symptoms that are associated with the

specific organs in the body as all the systems are interconnected. The Zulu notion of illness is closely associated to bile that circulates through the body and is bad, dirty and potentially toxic (Leclerc-Madlala, 1994).

To prevent ill health, internal cleansing through the process of purging is necessary to rid the body of excess bile and harmful dirt and in this way prevent illness. Regular vomiting is seen as a way to protect the body against sickness. There are various preparations available from pharmacies and others from traditional medical practitioners using herbs to purge the body of harmful dirt. The practice of using an enema or emetics to purge the body of illness means that the entire system is cleansed rather than a singular affected organ (Leclerc-Madlala, 1994).

These cultural purging practises require further exploration when investigating eating disorders such as bulimia nervosa, involving bingeing followed by purging. Subjects may refer to regular purging behaviour that is associated with either cultural cleansing practises and this may be misinterpreted as a symptom of an eating disorder. These cultural cleansing practises may also disguise an eating disorder, as the purging practice is perceived as acceptable and culturally appropriate. As a result, an eating disorder such as bulimia nervosa may be under-, or over-diagnosed if these cultural concepts are not considered.

2.10 INSTRUMENTS USED IN EATING DISORDERS

The tools available for the exploration of eating disorders are many and varied. They range from surveys and self-report questionnaires to treatment outcome measures and clinical interviews. The aim of this section is to give an overview of the instruments available for the study of eating disorders to justify the choice of the EDI for the present study.

2.10.1 QUESTIONNAIRES

Questionnaires range from those that assess individual perceptions, ideals and attitudes towards themselves, such as the Body Image Ideals Questionnaire (BIQ)(Brown et al., 1990; Cash, 1989,1990; Cash & Jacobi, 1992; Jacobi & Cash, 1994 as cited in Cash & Szymanski, 1995) and Eating Attitude Test (EAT) (cited in

Hooper & Garner, 1986). Other questionnaires are assessment focussed such as the Multiaxial Assessment of Eating Disorders (MAEDS) and Survey for Eating Disorders (SEDs). Each of these is discussed briefly below.

2.10.1.1 Body-Image Ideals Questionnaire (BIQ)

Description

The BIQ is a unique instrument that considers the degree of investment in personal ideals by assessing multiple physical attributes (Cash & Szymanski, 1995). The questionnaire includes ten attributes namely; “height, skin complexion, hair texture and thickness, facial features, muscle tone and definition, body proportions, weight, chest size, physical strength, and physical coordination” (Cash & Szymanski, 1995, p. 468-469). The person scores themselves on each of the above-mentioned attributes. The result is a comprehensive picture of how they perceive themselves (Cash & Szymanski, 1995).

Reliability and validity

The reliability and internal consistency of each of these dimensions of the BIQ was estimated using Cronbach’s coefficient alpha. The results were .75, .82 and .77. Correlations between each BIQ index and the SDS measure of social desirability were computed to determine discriminant validity. The test-retest reliability has not been determined (Cash & Szymanski, 1995).

2.10.1.2 Eating Attitudes Test (EAT)

Description

The Eating Attitude Test (EAT; Garner & Garfinkel, 1979) is a 40-item self-report questionnaire that goes one step further than the BIQ assessing behaviour as well as thoughts related to anorexia (Pumariega, 1986 as cited in O’Neill, 2003). The EAT has proved useful in the assessment of related eating disorder problems such as menstrual dysfunction caused by extreme physical activity and subsequent decrease in body mass that is common amongst ballet dancers, models and runners (Garner & Olmstead, 1984). Although it has proved useful for assessing anorexia nervosa it fails to adequately reflect the “multidimensional nature of eating disorders” (Lee et al.,

1998, p. 178) and related symptoms including binge eating, bulimia and overeating (O'Neill, 2003).

Reliability and validity

Cater and Moss (1984) reported the test-retest reliability to be .84. The EAT was reported moderately correlated with the Bulimia Test ($r = .67$; Smith & Thelen, 1984) and the Eating Questionnaire-Revised ($r = .59$; Williamson, Davis, Goreczny, Bennett & Watkins, 1989). The Mizes Anorexic Cognitions Questionnaire (MAC; Mizes, 1988) and Bulimic Investigatory Test, Edinburgh (BITE; Henderson & Freeman, 1987) have been found to be moderately correlated with the EAT: $r = .64$ and $r = .70$, respectively. Williamson et al. (1989) determined predictive validity using cognitive-behavioural treatment outcomes. The EAT reflected changes in symptomatology of recovered anorexic patients (Garner & Garfinkel, 1979 as cited in Allison, 1995, p. 357-358).

2.10.1.3 Multiaxial Assessment of Eating Disorder Symptoms (MAEDS)

Description

The MAEDS (Multiaxial Assessment of Eating Disorders Symptoms) is a brief and comprehensive self-report measure for the evaluation of eating disorders. It is particularly useful as a screening measure for severe eating pathology. It is also useful in the formation of differential diagnoses, as some of the subscales are associated with different eating disorder diagnoses (Martin, Williamson & Thaw 2000). It measures six symptoms associated with eating disorders namely; “binge eating, purgative behaviour, avoidance of forbidden foods, restrictive eating, fear of fatness, and depression” (Martin et al., 2000, p. 303). The MAEDS has proved valuable in the development of a treatment plan and identifying problematic symptom clusters due to its ability to identify variables that can be directly manipulated in order to change the treatment outcomes (Anderson et al., 2000 as cited in Martin et al., 2000). The MAEDS must be interpreted with caution, as is the case with the majority of self-report questionnaires and should be used in combination with a clinical interview if a diagnosis is required (Martin et al., 2000).

Reliability and validity

The reliability: internal consistency produced a coefficient alpha of .80 to .92 and test-retest reliability of .89 to .99. There was adequate concurrent and discriminant validity (Anderson et al., 1999 as cited in Martin et al., 2000).

2.10.1.4 Survey for Eating Disorders (SEDs)

Description

The SEDs is a self-report questionnaire presented using simple words that are unambiguous in nature. It is easy to administer and time effective. It has a high predictive value for diagnosing eating disorders although in some instances the SEDs appears to over- or under-diagnose eating pathology (Ghaderi & Scott, 2002). The “SEDs might be regarded as an accurate instrument for diagnosing cases of eating disorders, although some ‘under-diagnosing’ and ‘over-diagnosing’ occurs” (Ghaderi & Scott, 2002, p. 67).

Reliability and validity

Although the reliability and validity of the SEDs have not as yet been fully established, there have been a number of studies that have investigated different aspects of validity (Ghaderi & Scott, 2002).

“The SEDs was validated against the EDE interview. There were only 2 false positive cases out of 45 on the SEDs when patients were assessed by the EDE interview. Thus the positive predictive value was as high as 0.96. In the student sample the SEDs was validated against the EDI” (Ghaderi & Scott, 2002, p.61).

The Tukey *post hoc* test showed evidence of concurrent and discriminant validity ($p = 0.0001$, and 0.024 respectively)(Ghaderi & Scott, 2002). A number of population studies using the SEDs have revealed good face validity (Gotestam et al., 1995, 1998; Ghaderi & Scott, 1999, Taraldsen et al., 1996; as cited in Ghaderi & Scott, 2002).

2.10.2 TOOLS SPECIFICALLY FOR BULIMIA NERVOSA

2.10.2.1 Bulimic Inventory Test, Edinburgh (BITE)

Description

The BITE (Henderson & Freeman, 1987) is a 33-item questionnaire composed of yes/no questions as well as a rating scale. It is divided into a symptom subscale and severity subscale. It was designed to measure binge eating as well as the cognitive and behavioural features of bulimia. It can be used for clinical as well as sub-clinical cases of bulimia as well as a measure of symptom severity for the measurement of treatment outcomes.

Reliability and validity

The internal consistency for a sample of bulimic and nonclinical subjects reported alpha coefficients of .96 for the symptom subscale and .62 for the severity subscale. The concurrent validity was determined by correlating BITE scores to subscales of the EDI and EAT (Williamson, Anderson, Jackman & Jackson, 1995).

2.10.2.2 The Bulimia Test (BULIT)

Description

The BULIT (Thelen & Farmer, 1991) is a 28-item self-report measure that is specifically designed to assess the symptoms of bulimia nervosa or binge eating behavior. The BULIT has been administered to black and white university students in South Africa (Edwards, 2003). The findings were consistent with other recent studies, “which find disturbances in eating-related to attitudes and behavior in all ethnic groups in South Africa” (Edwards, 2003, p.16) However, there appear to be a number of major shortcomings that require consideration before using this test. Firstly, the term binge eating is a vague and undefined term that could be misleading if not accurately defined according to the DSM-IV (American Psychiatric Association, 2000) and secondly, the inability to place a time frame on eating disorder symptoms (Ghaderi & Scott, 2002).

Reliability and validity

“The reliability: Internal consistency is very high ($r = .97$). The test-retest reliability was found to be very stable over a 2-month test-retest interval ($r = .95$). Concurrent validity: The Bulimia Test Revised (BULIT-R) was found to be highly correlated with the original BULIT ($r = .99$). Thelen and Farmer (1991) found the BULIT-R to be highly correlated with a diagnosis of bulimia nervosa ($r = .74$)” (Williamson et al., 1995, p. 361-363).

2.10.3 INTERVIEWS

According to the literature (Ghaderi & Scott, 2002; Kutlesic et al., 1998 as cited in Martin et al., 2000) interviews are the most effective means of assessing eating disorders and making a diagnosis of eating pathology. There are a number of interviewing tools available that will be discussed in more detail.

2.10.3.1 Interview for Diagnosis of Eating Disorders- 4th Revision (IDED-IV)

Description

The IDED-IV (IDED-IV; Kutlesic, Williamson, Gleaves, Barbin, & Murphy-Eberenz, 1998 as cited in Martin et al., 2000) is a semi-structured interview that assists with diagnosis of eating disorders such as anorexia nervosa, bulimia nervosa, and Eating Disorders Not Otherwise Specified (EDNOS) by providing a checklist and decision tree with the diagnostic criteria (Martin et al., 2000).

Reliability and validity

It has been found to be a reliable and valid measure for assessing eating disorders as defined in DSM-IV (American Psychiatric Association, 2000) (Kutlesic et al., 1998 as cited in Martin et al., 2000).

2.10.3.2 Eating Disorders Examination (EDE)

Description

The EDE (Fairburn & Cooper, 1993) is an “investigator-based, semi-structured clinical interview, and is generally considered the ‘gold standard’ for the assessment of ED” (e.g., Fairburn & Belgin, 1994; Rosen et al., 1990; Wilson & Smith, 1989; as

cited in Ghaderi & Scott, 2002, p. 62). The EDE uses specifically structured questions that allow for the accurate retrieval of information (Ghaderi & Scott, 2002). Key definitions and terms are explained to the participants during the course of the interview and specific behavioural symptoms and compensatory behaviours such as purging, non-purging and overeating are assessed over a 28-day period (Rizvi, Peterson, Crow & Agras, 2000). It has 62 items that focus on specific eating pathology (Ficher, Herpertz, Quadflieg & Hererz-Dahlman, 1997). There are four subscales namely “Restraint, Shape concerns, Weight concerns and eating concern” (Ghaderi & Scott, 2002, p. 66). It is expensive and requires extensive training to administer effectively (Passi, Bryson & Lock, 2002).

Reliability and validity

The reliability-internal consistency in each of the five EDE subscales produced Cronbach’s alpha coefficients ranging from .67 to .90. (Cooper, Cooper & Fairburn, 1989) (Pike et al., as cited in Allison, 1995). Wilson and Smith (1989) examined the interrater reliability between subscale scores on the EDE also using the Pearson product-moment coefficients (1990) and found correlations ranging from .83 to .99. “Rosen et al. (1990) assessed the concurrent validity of the Overeating subscale. The study showed that higher overeating scale scores were associated with higher daily caloric intake ($r = .38, p < .0001$), a higher frequency of binge eating episodes ($r = .54, p < .0001$) as reported in the diaries” (Pike et al., 1995, p.320). Cooper et al. (1989) determined predictive validity by administering the EDE to 100 patients with either anorexia nervosa or bulimia nervosa (according to the DSM-III-R criteria) and 42 controls. All individual items of the EDE, as well as its five subscales, significantly discriminated between the two groups (Pike et al., 1995).

2.10.3.3 Eating Disorder Examination Questionnaire (EDE-Q)

Description

The EDE-Q is a self-report shortened version of the EDE, and is more cost effective. It consists of 38 questions based directly on the EDE and is designed to be completed in less than 15 minutes (Fairburn & Beglin, 1994 as cited in Passi et al., 2002). A shortcoming is that the EDE-Q reported significantly higher scores than the EDE. This may be as a result of the complexity involved in answering the questions, and

high scores on the EDE-Q may reveal a misunderstanding of the term binge eating (Passi et al., 2002).

Reliability and validity

The EDE-Q is a valid tool for assessing features of eating disorders (i.e., vomiting, laxative misuse). “However it is not nearly as accurate at assessing the binge eating and Shape Concern subscale scores” (Passi et al., 2002, p.47).

2.10.4 TOOLS FOR THE ASSESSMENT OF CHANGE IN EATING DISORDERS

2.10.4.1 Eating Inventory

Description

The Eating Inventory (Three factor eating questionnaire)(TFEQ; Stunkard & Messick, 1985) is a 51-item questionnaire comprising three major factors. These are, “Cognitive Restraint, Disinhibition and Hunger” (Westenhofer, Stunkard & Pudel, 1999, p. 54). It is useful in a clinical setting as it is useful in determining success rates in treatment outcomes (Westenhofer et al., 1998).

Reliability and validity

In a study by Westenhofer et al. (1999) new items were added to the Eating Inventory and these increased the reliability of both subscales: or the “Rigid Control subscale (which was .55 in the original study), from 0.70 to 0.77; for the Flexible control subscale, from 0.69 to 0.79.” (Westenhofer et al., 1999, p. 57). The Eating Inventory appears to display construct, convergent and divergent validity. “Simmons (1991) found that the TFEQ restraint scale correlated significantly ($r = .55$) with the drive for thinness scale and body dissatisfaction scale of the Eating Disorders Inventory (Garner, Olmstead, & Polivy, 1984)” (Gorman & Allison, 1995, p.169).

2.10.4.2 University of Rhode Island Change Assessment Scale (URICA)

Description

The URICA (University of Rhode Island Change Assessment Scale) is a 32-item self-report measure that assesses the four stages of readiness to change namely: “pre-

contemplation, contemplation, action, and maintenance” (Allison, 1995, p. 392). The main aim of URICA is to place individuals in discrete stages of change and to identify transitions between the stages (Allison, 1995). However, in the context of anorexia, it may overestimate the person’s readiness to change (Reiger et al., 2000).

Reliability and validity

The reliability: internal consistency of this technique has not yet been determined (Prochaska, Norcross, Fowler, Follick & Abrams, 1992 as cited in Allison, 1995). The reliability and internal consistency of the instrument have proved adequate when used for other problem behaviours. McConnaughy et al. (1983) reported internal consistency (Cronbracha alpha) coefficients of .88, .88, .89, and .88, respectively, for the precontemplation, contemplation, action, and maintenance scales. Prochaska, Norcross, et al., (1992) determined construct validity by comparing the action and contemplation scores. As action scores increased contemplation scores decreased and were maintained for 10 weeks. Predictive validity was also determined by Prochaska, Norcross, et al. (1992) by predicting attendance and weight loss (Rossi, Rossi, Velicer & Prochaska, 1995).

2.10.4.3 Anorexia Nervosa Stages of Change Questionnaire (ANSOCQ)

Description

The ANSOCQ is a 23-item self-report questionnaire based on Prochaska and Di-Clements’s stages of change model (1982). These stages are “pre-contemplation, contemplation, preparation, action, and maintenance” (Rieger, Touyz, Schotte, Beumont, Russell, Clarke, 2000, p. 389). The item pool was generated from a wide range of instruments, which are used to determine eating pathology. These include the Eating Disorders Inventory-2 (EDI-2) (Garner, 1991) and motivational constructs which include the URICA (McConnaughy et al., 1989 as cited in Rieger et al., 2000).

Reliability and validity

The ANSOCQ demonstrated good internal consistency: “Cronbach’s (1951) coefficient alpha for the scale was .90. The test-retest coefficient of the ANSOCQ over a 1-week period was .89” (Reiger et al., 2000, p. 391). Concurrent validity, the correlation “between patient and therapist scores on the ANSOCQ was .54

($p = .000$)” (Reiger et al., 2000, p. 392).

2.11 THE INSTRUMENTS CHOSEN

In order to fulfil the aims of this research a combination of eating disorder tools was used. The Eating Disorders Inventory (EDI; Garner, Olmstead, & Polivy, 1983) provided the initial screening of students who have the traits or symptoms that have been identified as relating to eating disorders. These themes are reflected in the EDI subscales namely, *Bulimia (B)*, *Body Dissatisfaction (BD)*, *Drive for Thinness (DT)*, *Perfectionism (P)*, *Interceptive Awareness (IA)*, *Interpersonal Distrust (ID)*, *Ineffectiveness (I)*, and *Maturity Fears (MF)*. This was followed by an in-depth clinical interview that is often referred to as the gold standard in measuring eating disorders (Black & Wilson, 1996 as cited in Rizvi et al., 1999). The interviewer has the opportunity to fine-tune their questions, probe and clarify the meanings behind particular responses and get a more precise indication of specific pathology (Garner, 1991).

The EDI is particularly useful as a screening instrument to indicate which individuals are likely to be preoccupied with their weight. The EDI is also useful in confirming clinical impressions in differentiating individuals who have anorexia nervosa from those who merely show symptoms of the disorder (Garner & Olmsted, 1984).

The EDI is a self-report measure that is easy to administer and provides the researcher with an effective means of measuring eating attitudes, traits and behaviours that are often associated with eating disorders (Joiner & Heatherton, 1996). Numerous research citations have indicated that it is a valuable research instrument and it is reported as the “most widely used self report measure” (Phelps & Wilczenski, 1993, p. 508). It measures the characteristics of eating disordered behaviour as well as the associated psychological symptoms that accompany the behaviour (Nevonen & Broberg, 2001). The EDI is a useful measure in clinical settings, identifying subtypes of anorexia nervosa and may provide the therapist with valuable information for treatment, and is useful in assessing change resulting from treatment. It has proved useful in measuring both specific and general psychopathology found in eating disordered patients (Augestad & Flanders, 2003). Although it measures both the

cognitive and behavioural aspects of anorexia and bulimia, it fails to include questions about amenorrhoea, weight or height. As a result, the criteria for the diagnosis of anorexia nervosa cannot be fulfilled using the EDI. (The reliability and validity will be discussed in more detail below, Sections 2.18 and 2.19).

The EDI-2 (Garner, 1991) is a more recent, revised and updated version of the EDI and was considered as a possible tool to be used for the current research project. The advantages and disadvantages of the EDI-2 will be discussed in more detail in order to gain a more in-depth understanding as to why the EDI was chosen for this research project. The EDI-2 is a widely used self-report measure (Ghaderi & Scott, 2002). It has three extra sub-scales; *Asceticism*, *Impulse Regulation* and *Social Insecurity* that are also associated with eating pathology. The item-total scale correlations for non-patient college students appeared to be lower than reported on the original EDI subscales. Further analysis however revealed that a subgroup of patients actually scored higher on each subscale. As a result, the subscales were retained because they appeared to have relevance for a sub-group of eating disorders (Garner & Olmstead, 1984). These additional three subscales are in the preliminary validation stage. The EDI-2 has not been as extensively used as the EDI and there is less available research on the EDI-2. The questionnaire is also substantially longer which could result in more resistance to its completion.

2.12 SHORTCOMINGS OF USING THE EATING DISORDERS INVENTORY (EDI)

There are a number of shortcomings that require careful consideration when using the EDI. Firstly, as is the case with the majority of self-report measures, there is the danger of a defensive response style from the respondent that may invalidate or distort the data (Garner & Olmsted, 1984). The interviewer has little control over the completion of the questionnaire and items that are left blank may pose problems in the final analysis and interpretation of the EDI (Augestad & Flanders, 2003). Secondly, the EDI was refined on its capacity to differentiate between a criterion group and non-clinical samples. As a result, the EDI may lack external validity and elevated scale scores among non-clinical groups cannot be assumed to reflect the same pathology as

the patient group (Garner & Olmstead, 1984). Thirdly, the EDI fails to consider the full range sample of psychopathological characteristics of anorexia nervosa.

There are many personality features that have been identified as associated with eating disorders. These include; “obsessional, introverted, socially anxious, conscientious, perfectionist, competitive, over controlled, socially dependent, shy, and ‘neurotic’” (Garner & Olmstead, 1984, p.3). Finally, the EDI measures cognitive and behavioural characteristics of eating disorders, namely anorexia nervosa and bulimia nervosa, but fails to include questions concerning, for example, amenorrhea, weight, height or use of oral contraceptives. The EDI alone is insufficient in the formulation of a diagnosis of eating disorders (Ghaderi & Scott, 2002). To improve the EDI as a screening measure that can be used for clinical evaluation, the above additional questions could be included in order to make a differential diagnosis of eating disorders (Augestad & Flanders, 2003).

2.13 RELIABILITY OF THE EATING DISORDERS INVENTORY (EDI)

- The reliability: internal consistency revealed “coefficient alphas for the original EDI scales ranging from .69 to .93, with the exception of *Maturity Fears* subscale (.65) in a group of 11- to 18 year-olds (Garner, 1991). The 1-year test-retest correlations on a sample of 282 non-patients ranged from .41 to .75” (Crowther, Lilly, Crawford, Shepherd, & Oliver, 1990 as cited in Allison, 1995, p. 349).
- “The test–retest correlations for the *Drive for Thinness* and *Body Dissatisfaction* were above .70. Welch (1988) reported test-retest reliability of all subscales over 1-week period to be above .80 with the exception of the *Interoceptive Awareness* subscale ($r = .67$). The test –retest reliabilities after 3 weeks on 70 nonpatients were above .81” (Wear & Pratz, 1987 as cited in Allison, 1995, p. 349-351).

2.14 THE ORIGINAL VALIDATION OF THE EATING DISORDERS INVENTORY (EDI)

The following section will examine in some detail how the EDI was validated. Two groups participated in the original validation of the EDI. These two groups were a clinical sample comprising of a number of anorexic patients (AN-R) (n=56) and bulimic patients (AN-B)(n=73). The non-patient female comparison group (FC)(n=770) were first and second year psychology students at the University of Toronto (Garner & Olmstead, 1984).

Validation of the EDI took place on a number of levels.

- The content validity was achieved by taking a pool of 146 items that were designed to measure eleven constructs thought to be meaningful in eating disorders. These were generated by clinicians who were familiar with the research literature and involved in patient care. Only eight of the constructs met the criteria for validity and reliability and these are the sub-scales used in the EDI (Garner & Olmstead, 1984).
- Concurrent validity was initially determined by assessing the “agreement between clinician rating of subscale traits and patient self-report subscales on the EDI, results ranged from .43 to .68. (Garner et al., 1893). Scores on the original eight subscales of the EDI were positively correlated ($r = .26$ to $.71$) with scores on the Eating Attitudes Test (EAT; Garner, Olmsted, Bohr, & Garfinkel, 1982). The eating and weight related subscales of the EDI were correlated ($r = .44$ to $.61$) with the Restraint scale (Herman & Polivy, 1975), measuring dieting behaviour” (Allison, 1995, p. 351). Further studies to determine the concurrent validity used clinically diagnosed patients. The EDI scores of the patients were compared with the judgment of clinicians, comprising of a psychologist and psychiatrist, of whom one was the client’s primary therapist. These clinicians were familiar with the patient’s background and history. The therapists were then asked to rate how relevant all of the patient’s traits were compared to other anorexics they had treated (Garner & Olmstead, 1984).

- Predictive validity: “The *Bulimia* scale of the EDI has been shown to be a stable predictor of the presence of binge eating at 1-year and 2-year follow-ups”(Norrington, 1990 as cited in Allison, 1995, p.352).
- Discriminant validity: The EDI subscales, *Drive for Thinness*, *Body Dissatisfaction* and *Bulimia* were found to be more highly correlated with other measures which assessed eating and dieting behaviour and less correlated with measures of more general psychopathology (Williamson, Anderson, Jackman & Jackson as cited in Allison, 1995).
- Criterion-related validity, which is the ability of items to discriminate between eating disordered and non-patient samples, was determined by administering the EDI to a small group (n=49) of recovered anorexic patients. The recovered anorexics scored lower than the anorexic group on each subscale of the EDI. Furthermore, the anorexic patients were similar to the non-patient group means (Garner & Olmstead, 1984).
- Convergent validity was achieved by comparing the EDI and Eating Attitudes Test (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982) and the Restraint Scale, a measure of dieting behavior (Herman & Polivy, 1975). The results indicated that there appear to be strong relationships with other measures of the same construct (Garner and Olmstead, 1984).

It can be concluded that the EDI has been reasonably well validated, and appears reliable (Augstad & Flanders, 2003).

2.15 SHORTCOMINGS OF THE EATING DISORDERS INVENTORY (EDI)

Although the EDI appears to be well validated there is some uncertainty about the effectiveness of the EDI across cultures. The EDI has proved useful for clinical as well as non-clinical purposes in Western populations. However, studies regarding its cross-cultural validity are limited (Lee et al., 1997, p. 178). It is important to consider that the original EDI validation was performed in a Western culture and therefore cannot be assumed to have cross-cultural validity (Hooper & Garner, 1986). The validity of the EDI in Africa has not been well established. However, the EDI has been quite widely used in research in South Africa by Wassenaar et al. (2000), Marais

et al. (2002) and Edwards et al. (2003). Further studies are required to determine the validity of the EDI in South Africa. This research project is a pilot study towards the cross-cultural validation of the EDI.

CHAPTER 3

METHODOLOGY

3.1 AIMS

To explore the relationship between the EDI scores and a clinical interview to determine if there is a match between the two and to determine if this is a viable design for a large-scale validation study.

3.2 HYPOTHESES

That in all participants, irrespective of their cultural background, a high EDI score will correlate with a positive diagnosis for an eating disorder in the clinical interview.

3.3 SAMPLE

The sample consisted of a convenience sample of female university students. The participants were over the age of 18 years, at university and were thus assumed mentally competent. The criteria for selection were based on research that indicates that almost all cases with sub-clinical eating pathology were females and that “black and white women experience similar weight concerns” (le Grange, Telch & Tibbs, 1998, p. 253). Eating disorders appear to predominantly affect females (90-95% of patients are women)(Kaplan & Sadock, 1998). Adolescents ranging between the ages of twelve and twenty- five are the “high risk” group (Kaplan & Sadock, 1998). Although this sample is not representative of South Africa as a whole, since the black subjects have been through a process of acculturation and may have lost some of their traditional norms and beliefs, they are at risk of developing eating disorders. Research has indicated that when “persons of different racial groups internalise the Caucasian norms of thinness as the ideal, then greater degrees of disordered eating and body dissatisfaction emerge” (Pate, Pumriega, Hester & Garner, 1992 as cited in Tsai & Gray, 2000, p.527).

3.4 PROCEDURE

3.4.1 The EDI questionnaire

The researcher introduced herself and her project to each class (Accountancy, Mathematics, Psychology, Drama, Library Science, Dietetics, and Education) ten minutes before the end of their lecture (this was pre-arranged with the lecturers concerned) (Appendix A). Students who were interested in filling in a questionnaire were asked to raise their hands as an indication of their cooperation. Two hundred and sixty five EDI questionnaires were handed out to students. The questionnaires, once completed were handed back to the researcher.

The EDI questionnaires were then scored using the EDI key (Garner & Olmstead, 1984). Thirty participants in total were interviewed, comprising fifteen high and fifteen low scorers who consented to a clinical interview were contacted for in-depth interviews. The validation design compares the results of EDI scores with clinical interviews to determine the match between the two. Due to time constraints, the first fifteen high and low scorers who agreed to interviews were accepted. As a result, some of the selected participants were not the highest and lowest scorers. Details of the omissions will be discussed below.

3.4.1.1 Details of omissions

Missed appointments:

Three participants had appointments for interviews and did not arrive for their interviews. Two of these were low scorers on the EDI questionnaire and one was a high scorer who missed her appointments after rescheduling three times.

Refused = 5 2%

Of the sample that filled in the EDI questionnaires and signed consent to be a part of an in-depth interview (5) 2% when contracted for interview refused. These consisted of both high and low scorers.

Unable to contact = 29 11%

Twenty nine (11%) high and low scorers filled in the EDI questionnaire and signed consent to an in-depth interview however were unable to be contacted for the

following reasons:

- (1) They had given the wrong telephone number.
- (2) They only gave an E-mail address and they did not reply to the E-mail, which was sent to them (Appendix D).
- (3) No telephone number was given.
- (4) They had moved countries.

Incomplete = 18 7%

Eighteen (7%) of the EDI questionnaires were unable to be scored, as they were incomplete.

Participants who consented to be contacted = 247 96%

Of the 257 completed questionnaires, 10 participants did not give an e-mail address nor telephone numbers and were thus unable to be contacted. 247 (96%) however consented to be contacted.

3.4.2 The clinical interview

The clinical interviews began with a general introductory patter that included an overview of the research project, stating its main aims and the necessity of interviews to confirm the validity of the EDI. The interviewees were informed of their right to discontinue the interview at any stage, as well as their right to refrain from disclosing any information they chose not to. They were informed that there would be no financial benefits to participating in the interview. They were simply assisting in furthering research.

The co-investigator (an experienced clinician with 20 years of clinical experience and some international publications in eating disorders) conducted twenty-six of the thirty interviews and the researcher added additional questions she felt relevant or had been left out. The researcher conducted four of the thirty interviews unaccompanied by the co-investigator. The interviews were audio taped for cross-reference purposes, to check for discrepancies between interviewers. The co-investigator approached the interviews 'blind', in other words unaware of the participant's EDI score. After

contacting the participants for an interview, the researcher refrained from consulting the EDI scores. On completion of each interview, the co-investigator gave his clinical impressions of the participants.

The interview mainly covered areas relating to the first three subscales which are used in the DSM-IV (American Psychiatric Association, 2000) for the diagnosis of anorexia and bulimia nervosa. The three subscales are as follows: *Drive for Thinness* (an excessive concern about dieting and a preoccupation with weight and losing weight), *Bulimia* (the tendency to overeat, also known as bingeing followed by the impulse to engage in self induced vomiting). *Body Dissatisfaction*, (reflects a belief that specific parts of the body associated with shape change or increased fatness at puberty are too large e.g., hips, thighs and buttocks). The interviews were also partially guided by the Eating Disorders Examination (EDE) (Fairburn & Cooper, 1993), which explores attitudes and/or behaviours relating to eating and body shape.

In closing, the interviewees were thanked for their participation in the interview and offered a summary of the results on completion of the study. Participants' height and weight were taken to confirm their Body Mass Index (BMI=weight in kg/height in metres, squared), if they consented to this. Interviewees who displayed eating pathology were advised to go to the Student Counselling Centre for counselling.

3.5 INSTRUMENTS FOR ASSESSMENT

3.5.1 The EDI questionnaire

As outlined in Section 2.12, the EDI (Garner & Olmsted, 1984) was constructed to assess the behavioural and psychological traits common in anorexia nervosa and bulimia nervosa. It is primarily a screening tool and is not a diagnostic instrument (Garner & Olmsted, 1984). It has proved useful in identifying anorexia nervosa subtypes and can be used in combination with clinical assessment towards the diagnosis of eating disorders (Wilfley et al., 1996).

The EDI is a 64 item self-report measure that has eight-scales (with abbreviations) are listed below:

1. Drive for Thinness (DT)
2. Bulimia (B)
3. Body Dissatisfaction (BD)
4. Ineffectiveness (I)
5. Perfectionism (P)
6. Interpersonal Distrust (ID)
7. Interoceptive Awareness (IA)
8. Maturity Fears (MF)

The first three sub-scales measure attitudes and behaviours related to body size and shape, and the remaining five sub-scales measure traits that have proved fundamental in eating disordered individuals (Garner & Olmstead, 1984).

The first three subscales are of primary importance for this study as they are the subscales that are used in the DSM-IV (American Psychiatric Association, 2000) for the diagnosis of anorexia and bulimia nervosa.

3.5.1.2 Additional data collected:

- (1) Demographic information including the person's name, age, gender, race, marital status, occupation as well as father and mother's occupation.
- (2) Present weight in kilograms and height in meters, to determine Body Mass Index ($BMI = \text{weight in kg} / \text{height in metres, squared}$).
- (3) Information about the person's highest and lowest past weight and for what period of time they measured this weight. The participant's ideal weight and their feelings of satisfaction or dissatisfaction about their weight (Appendix C).

3.5.2 Clinical interview

Interviews are considered the most effective means of assessing eating disorders and making a diagnosis of eating pathology (Ghaderi & Scott, 2002; Kutlesic et al., 1998; Martin et al., 2000). The EDE (Fairburn & Cooper, 1993) is a semi-structured clinical interview that is considered an effective tool in the assessment of eating disorders (Fairburn & Belgin, 1994; Rosen et al., 1990; Wilson & Smith, 1989 as cited in

Ghaderi & Scott, 2002). The EDE however requires extensive training in order to use it effectively. As neither the co-investigator nor the researcher had been trained in this tool it was merely used as a guide and the clinical interviews were primarily guided by the DSM-IV (American Psychiatric Association, 2000) criteria for anorexia and bulimia nervosa.

3.6 DATA ANALYSIS

Throughout the data analysis the significance level was set at five percent ($p < 0.05$).

3.6.1 The EDI subscales

The scores for the eight EDI subscales were calculated for each subject. These were then compared to Hooper's (1986) suggested cut-off scores (cited in Geach, 1995). The subjects were assigned to groups according to whether their score fell above or below the cut off points for that subscale.

The mean scores and standard deviations for the eight subscales of the EDI were calculated separately for blacks, Asians and whites.

Pearson's Correlation Analysis of the eight subscales was done separately for blacks, Asians and whites to test for significant correlations.

The percentage of each race group that fell above the cut off was calculated to give a rough estimate of the differences.

3.6.2 Validation study

As discussed in Section 2.2.1, the aim of this study was to determine concurrent validity. This will be assessed by determining the agreement between the clinical interview and the EDI rating. A highly correlated and significant result will mean that the research design using the EDI and clinical interviews is appropriate for a large-scale validation venture (Terre Blanche & Durrheim, 1999).

After each clinical interview the co-investigator predicted if the candidate was a high (an indication of eating pathology) or a low scorer (no eating pathology) according to the EDI. The ratings definitions were as follows:

- (1) High: The presence of DSM-IV (American Psychiatric Association, 2000) criteria is the key criteria.
- (2) Low: Absence of DSM-IV (American Psychiatric Association, 2000) criteria.

The co-investigator also made predictions of the three (*Drive for Thinness, Bulimia and Body Dissatisfaction*) EDI subscales.

An analysis of the EDI cut-offs on the three subscales was used to determine the definitions of high and low scorer. The definitions are listed below:

- (1) The high category was an EDI score of 60 and above.
Or
One of the first three subscales and two or more on the psychological subscales
Or
More than one of the first three clinical subscales.
- (2) Low category is a score of 59 or below
Or
None or one of the other eight EDI subscale categories.

Using a cross tabulation table the clinical interviews and EDI ratings were compared to determine the match between the two. According to Craft, a correlation shows the relationship between two variables and quantifies the “strength or degree of relationship” (De Vos, 1998, p. 227).

The Body Mass Index (BMI) was also used as a method of comparison as the BMI is a clinical tool to determine whether a patient or participant is underweight, overweight or within normal weight range for height.

The data collected consisted of counts. This is categorical data and lends itself to Chi Squared analysis. A Chi Square analysis was conducted to assess the significance of the association. Kendall's tau was performed to determine the strength of the association between:

- (1) The clinical ratings and the EDI ratings
- (2) The clinical rating and the BMI ratings
- (3) EDI ratings and the BMI ratings

3.7 ETHICAL ISSUES

3.7.1 Preserving autonomy

Permission to report on this information was obtained in the form of written consent when the individual filled in the EDI questionnaire. The EDI questionnaires that were used were kept in a safe place by the researcher and the co-investigator in order to maintain confidentiality. The audiotapes and results of high and low scorers on the EDI questionnaires were kept in a safe place by the researcher and the co-investigator. The participants were free to withdraw from the research at any time if they so wished.

3.7.2 Preserving confidentiality and anonymity

The audiotapes, EDI forms and interview notes were kept in a safe place by the co-investigator and the researcher. Once the students participating in the in-depth interviews had been contacted their names were destroyed and only biographical data was kept. The students who were not required for interviews had their forms kept in a safe place by the researcher and the co-investigator. Neither names nor any identifying data were recorded in the research.

3.7.3 Limits to confidentiality

The names, addresses, telephone numbers and demographic details were initially required from all participants. However the ones that were not required for further interviews were kept in safe keeping by the researcher and the co-investigator. If the person appeared to be a threat to themselves or others, confidentiality would be broken. For example in the case of an anorexic that is suicidal and threatening harm

the relatives or other support structures would be contacted. The breaking of confidentiality was fortunately not necessary in the course of the interviews as no participants appeared to be a threat to themselves or others, and the ones who appeared to have some eating pathology agreed to go for further counselling.

3.7.4 Non-maleficence

This research had the possibility of causing harm or distress to participants, especially if they took part in in-depth clinical interview without adequate follow-up and referral. The EDI in combination with the clinical interview may have indicated that participants have an eating disorder. It was the researcher's responsibility to ensure that the participants received assistance if problems were exposed. To minimize harm (Emanuel, Wendler & Grady, 2000) to the participants, debriefing took place after the clinical interview. Participants who were assessed as 'at risk' as well as those who wanted further intervention (n=9) were referred to the Student Counseling Center, which has experience in dealing with eating disorders

3.7.5 Potential harm

Psychological harm may be caused when participants realise that they have an eating disorder or unresolved psychological problems. Students who appeared to be "at risk" were referred to the Student Counselling Centre for further counselling.

Another potential harm may be to the low scorers who may feel they have gained nothing and that participating in the research has been of no benefit to them.

Intervention: All the students were offered a summary of the research results. They were also informed of the benefits of attending the Student Counselling Centre for other problems they may encounter.

3.7.6 Benefits

The participants may become aware of potential problems and have the opportunity to explore these further. If participants were found to have eating pathology they were given an opportunity to deal with this by going to counseling. They were made aware of the facilities and support structures they could use, for example, the Student Counseling Center. Participants were exposed to a self-report measure, which broadened their understanding of psychological research. A summary of the results

was made available on a website. Participants who appeared to have a healthy BMI and healthy food habits were affirmed for this in the debriefing session.

3.8 ANTICIPATED PROBLEMS

- (1) Participants discontinuing midway through the research. This may present a problem especially if the participants do not come to the in-depth interviews (Appendix D). In order to accommodate for this, the questionnaires were kept until all the data had been collected in case further participants needed to be contacted.
- (2) Participants may become angry and defensive in the interviews as eating disorders is a sensitive topic. To overcome this potential problem, the co-investigator, who is experienced in dealing with eating disorders, conducted the majority of the interviews.
- (3) Participants may withhold vital information from the interviewer as they are either embarrassed or did not want to reveal personal information to a complete stranger.

The results of the study are presented in the next chapter.

CHAPTER 4

RESULTS

This chapter will present the results of the data analysis described in chapter 3. Discussion of these results will be presented in the following chapter.

So that the results of the study can be placed in context, the overall population demographics of KwaZulu Natal are presented below. The latest figures available are those of the second democratic Census (Census 2001), released in July 2000.

For the purpose of this study, EDI questionnaires were handed out to black, coloured, Asian and white female university students from a wide variety of faculties, including Accountancy, Mathematics, Psychology, Drama, Library Science, Dietetics, and Education (see Section 3.4.1. for details). Although 265 questionnaires were handed out, 8 of the questionnaires contained missing data, which left 257 completed questionnaires.

The sample comprised the following:

Table 1
The sample of EDI questionnaires answered and the population census

	Number	Percentage	Population census %
Black	79	30.7	84.9
Coloured	4	1.6	1.5
Asian	66	25.7	8.5
White	108	42.0	5.1
Total	257		

Note. 53.2% of the census population was female, while 100% of the sample was female.

In this study the participants were mostly white, followed by black, Asian and then coloured. The sample is therefore not representative of the population as a whole, as can be seen from Table 1.

As the coloured sample was limited, (n=4), they were excluded from the data analysis.

Before describing the validity study in which the highest 15 and lowest 15 EDI scorers were clinically interviewed, the reliability of the 64 EDI items and the 8 subscales are discussed and thereafter the characteristics of the entire sample (N=257) are described and compared with the other South African studies to determine general similarities and differences in EDI means.

4.1 RELIABILITY OF THE EDI

The 64 EDI items produced a Cronbach's Alpha of .9314, which indicates that the EDI is a highly reliable instrument and that the items are highly correlated. Item 51 produced a negative correlation, which could indicate that the wording of the question may require revising, as it does not complement the other 63 items.

The 8 EDI subscales produced a Cronbach's Alpha of .82, which is also reliable and suggests that the 8 subscales work effectively in relation to the other subscales.

4.2 THE EDI SUBSCALES

4.2.1 Mean subscale scores

The mean subscale scores of all participants are summarized below (Table II). Canadian female college sample means (Garner & Olmstead, 1984) and suggested cut-off scores (Hooper, 1986 cited in Geach, 1995) are provided for comparison.

Table II
Means and standard deviations for EDI subscales

	DT	B	BD	I	P	ID	IA	MF
Group Mean	5.07	3.42	7.55	3.83	5.58	4.11	5.68	4.26
SD	5.90	5.90	6.77	3.92	4.18	3.77	4.12	3.76
N	256	255	255	251	257	257	247	257
Canadian Sample	5.1 (5.5)	1.7 (3.1)	9.7 (8.1)	2.3 (3.8)	6.4 (4.3)	2.4 (3.0)	2.3 (3.6)	2.2 (2.5)
Cut off's	≥15	≥4	≥14	≥10	≥8	≥5	≥10	≥5

Note. Key: DT- Drive for Thinness, B-Bulimia, BD-Body Dissatisfaction, I-Ineffectiveness, P-Perfectionism, ID-Interpersonal Distrust, IA-Interoceptive Awareness, MF-Maturity Fears. Figures in parentheses are the standard deviations.

The means for the groups (black, Asian and white) were higher than the Canadian sample on all the subscales, except *Body Dissatisfaction* and *Perfectionism* where the Canadian sample scored higher.

4.2.2 Comparison of mean subscale scores by race

The mean subscale scores for black, Asian and white participants are summarized below (Table III). As in the table above (Table II) these means and standard deviations will be compared to the Canadian female college sample means (Garner & Olmstead, 1984) and the suggested cut-off scores (Hooper, 1986 cited in Geach, 1995) by way of comparison.

Table III
Means and standard deviations for EDI subscales by race

	DT	B	BD	I	P	ID	IA	MF
Group								
Black								
Mean	4.76	3.44	6.04	4.00	6.96	4.60	6.14	5.36
SD	5.48	3.88	5.48	4.42	4.03	4.11	4.46	4.12
Asian								
Mean	4.85	3.45	8.38	4.64	6.13	4.53	5.89	5.72
SD	5.97	3.94	7.93	4.32	4.18	3.84	4.51	4.1
White								
Mean	5.31	3.25	8.31	3.21	4.11	3.49	5.26	2.64
SD	6.09	3.54	7.36	3.72	3.65	3.82	3.66	2.77
Canadian Sample	5.1 (5.5)	1.7 (3.1)	9.7 (8.1)	2.3 (3.8)	6.4 (4.3)	2.4 (3.0)	2.3 (3.6)	2.2 (2.5)
N=271								
Cut-Off's	≥15	≥4	≥14	≥10	≥8	≥5	≥10	≥5

Note. Key: DT- Drive for Thinness, B-Bulimia, BD-Body Dissatisfaction, I-Ineffectiveness, P-Perfectionism, ID-Interpersonal Distrust, IA-Interoceptive Awareness, MF-Maturity Fears. Figures in parentheses are the standard deviations.

The means for the black and Asian participants on *Drive for Thinness* and *Body Dissatisfaction* were lower than the Canadian sample. However the means for black and Asian participants on the other subscales were higher than the Canadian sample.

The means for the white participants were higher than the Canadian sample on all the subscales with the exception of *Body Dissatisfaction* and *Perfectionism*, which were lower.

This sample generally appears to have higher scores on the subscales than the Canadian sample.

4.2.3 Comparative means and standard deviations of three studies

A comparison of the means and standard deviations of three studies all conducted in South Africa are (Table IV) provided below. The studies include this study, the study by Wassenaar et al. (2000) and Marais et al.(2002).

Table IV
Comparative means and standard deviations of three studies

Group	DT	B	BD	I	P	ID	IA	MF
Black								
This study	4.76 (5.48)	3.44 (3.88)	6.04 (5.48)	4.00 (4.42)	6.96 (4.03)	4.60 (4.11)	6.14 (4.46)	5.36 (4.12)
Wassenaar ¹	8.0 (5.7)	1.6 (2.8)	8.2 (7.4)	2.7 (2.8)	10.1 (4.7)	4.3 (3.0)	3.8 (3.5)	6.4 (3.8)
Marais ²	6.8 (4.8)	1.46 (2.4)	8.8 (7.2)	3.35 (3.6)	8.16 (4.6)	4.58 (3.6)	5.58 (3.9)	6.96 (4.7)
White								
This study	5.31 (6.09)	3.25 (3.54)	8.31 (7.36)	3.21 (3.72)	4.11 (3.65)	3.49 (3.82)	5.26 (3.66)	2.64 (2.77)
Wassenaar ¹	6.4 (5.9)	2.1 (2.9)	13.0 (8.2)	3.1 (4.8)	4.9 (4.0)	3.2 (3.7)	2.9 (4.0)	2.2 (2.0)
Marais ²	6.51 (4.55)	1.96 (3.22)	12.67 (8.24)	2.99 (4.67)	5.26 (4.23)	3.23 (3.86)	3.07 (4.25)	2.53 (2.69)
Canadian N=271 Cut-Off's	5.1 (5.5) ≥15	1.7 (3.1) ≥4	9.7 (8.1) ≥14	2.3 (3.8) ≥10	6.4 (4.3) ≥8	2.4 (3.0) ≥5	2.3 (3.6) ≥10	2.2 (2.5) ≥5

Note. Key: DT- Drive for Thinness, B-Bulimia, BD-Body Dissatisfaction, I-Ineffectiveness, P-Perfectionism, ID-Interpersonal Distrust, IA-Interceptive Awareness, MF-Maturity Fears. Figures in parentheses are the standard deviations.

¹ Wassenaar et al., (2000)

² Marais et al., (2002)

In this study, the black sample scored lower on *Drive for Thinness*, yet higher on *Bulimia* compared to Marais et al. (2002) and the study by Wassenaar et al. (2000) where the black sample generally scored highly on the psychological dimensions of *Perfectionism* and *Maturity Fears*.

The white sample in this study scored lower on *Drive for Thinness*, yet higher on *Bulimia* in comparison to the study by Wassenaar et al. (2000) and Marais et al. (2002). On the other subscales the participants all scored higher than Wassenaar et al. (2000) and Marais et al. (2002) on the psychological dimensions of eating disorders except on the subscale *Perfectionism* where Marais et al. (2002) sample scored higher.

The scores on *Body Dissatisfaction* in this study were lower when compared to the studies by Wassenaar et al. (2000) and Marais et al. (2002).

4.2.4 Pearson's correlations between subscales

Pearson's Correlation analysis of the eight subscales was done on the entire group to ascertain the nature of the relationship between the subscales. A correlation of 0 represents no relationship. Those correlations that were found to be significant ($p > 0.05$) are highlighted in Table V below.

Table V
Pearson's correlation for EDI subscales

	DT	B	BD	I	P	ID	IA	MF
DT	1							
B	0.53	1						
BD	0.54	0.10	1					
I	0.53	0.48	0.34	1				
P	0.42	0.39	0.22	0.43	1			
ID	0.40	0.43	0.10	0.53	0.41	1		
IA	0.58	0.56	0.24	0.59	0.49	0.60	1	
MF	0.32	0.28	0.17	0.46	0.38	0.48	0.44	1

Note. Key: DT- Drive for Thinness, B-Bulimia, BD-Body Dissatisfaction, I-Ineffectiveness, P-Perfectionism, ID-Interpersonal Distrust, IA-Interoceptive Awareness, MF-Maturity Fears.

There were only positive relationships between subscales. As one subscale increases so do the others. Significant correlations are indicated in bold print where ($p < 0.5$). These are as follows: *Bulimia* and *Drive for Thinness* and where the correlation is 0.53; *Body Dissatisfaction* and *Drive for Thinness*, 0.54; *Ineffectiveness* and *Drive for Thinness*, 0.53; *Interpersonal Distrust* and *Ineffectiveness*, 0.53; *Interoceptive Awareness* and *Drive for Thinness*, 0.58; *Interoceptive Awareness* and *Bulimia*, 0.56 and *Interoceptive Awareness* and *Ineffectiveness*, 0.59. We can be 95% sure that a correlation of 0.6 is not obtained by chance. The correlation is as follows: *Interpersonal Distrust* and *Interpersonal Awareness* where the correlation is 0.60. This indicates that *Interoceptive Awareness* is strongly positively correlated to *Drive for Thinness*, *Bulimia*, *Ineffectiveness* and *Interpersonal Distrust*.

4.2.5 Proportional differences above cut-off points

Cross tabulation and chi-square analysis was used to assess the proportional differences between race groups falling above the cut-off scores for each of the EDI subscales. The results are summarized in Table VI below.

Table VI
Scores above cut-offs by race

Subscale	% Black	%Asian	%White
DT	4	9	10
B	32	27	31
BD	9	20	18
I	10	11	4
P	38	32	14
ID	30	35	25
IA	12	13	12
MF	42	42	12

Note. Key: DT- Drive for Thinness, B-Bulimia, BD-Body Dissatisfaction, I-Ineffectiveness, P-Perfectionism, ID-Interpersonal Distrust, IA-Interoceptive Awareness, MF-Maturity Fears.

On the first three pathological subscales, blacks (32%), Asians (27%) and whites (31%) had a higher percentage above the cut-off score on the *Bulimia* sub-scale.

On the psychological sub-scales the black and Asian participants had a higher percentage above the cut-off scores on the sub-scales of *Perfectionism* (blacks 38%, Asians 32%) and *Maturity Fears* (blacks 42%, Asians 42%).

All three groups had a higher percentage above the cut-off scores on the sub-scale *Interpersonal Distrust* (blacks 30%, Asians 35%, whites 25%).

The percentage of participants who scored above the cut-off scores is represented in the form of bar graphs below. The percentage of participants in each race group who scored above the cut-off scores appears at the top of each bar graph.

Figure 1. The percentage of black, Asian and white participants above the cut-off scores on the subscale Drive for Thinness.

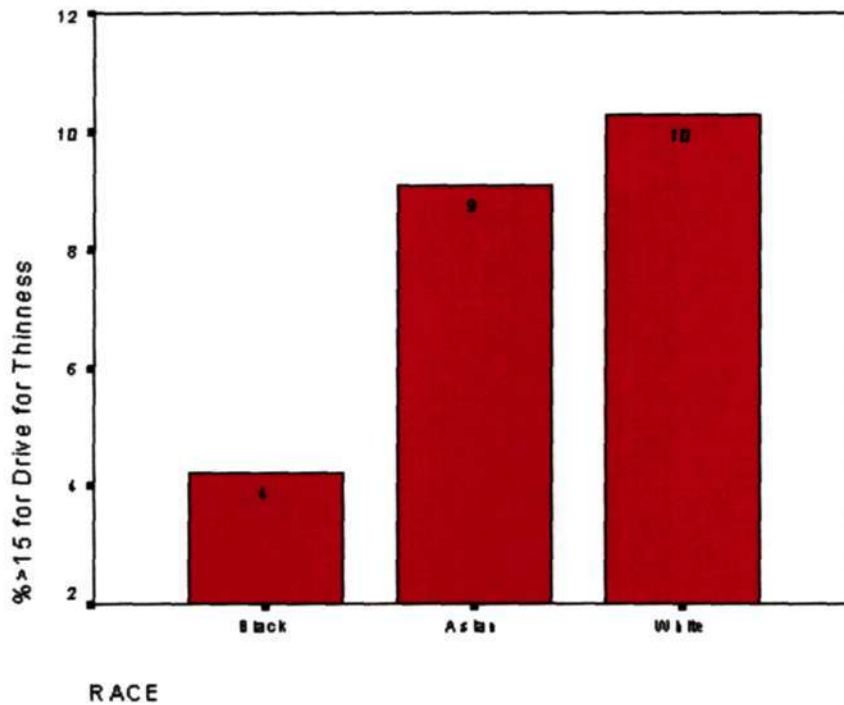


Figure 1 shows that white participants scored the highest on *Drive for Thinness* (10%), followed by the Asian participants (9%) and the lowest being the black participants (4%).

These results are consistent with the traditional view that eating disorders have predominantly been thought of as a white female phenomenon (Root, 1990 as cited in Kramers, 2000). It supports earlier research that seemed to indicate that white women tended to have a higher drive towards thinness compared to their black counterparts (Wilfley et al., 1996). The study by Marais et al. (2002) suggests that black women experience less social pressure about their weight and are more weight tolerant than their white counterparts. However as they adopt the values of the West they report greater pressure to diet and lose weight.

Figure 2. The percentage of black, Asian and white participants above the cut-off scores on the subscale Bulimia.

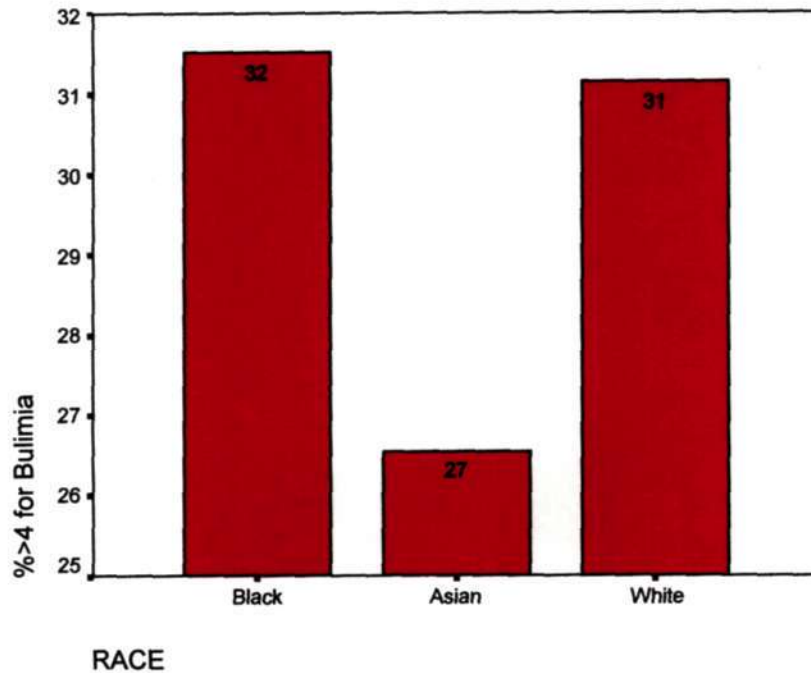


Figure 2 shows that black participants scored highest on the *Bulimia* subscale (32%), followed by the white participants (31%) and the lowest being the Asian participants (27%).

In this study the black and white participants scored higher on the *Bulimia* subscale. These findings are consistent with literature by Geach (1995), which indicated that an increase in eating disorders across ethnic and socio-economic groups. These findings however differ from the studies by Wassenaar et al. (2000) and Marais et al. (2002) indicating that the white group scored higher on the *Bulimia* subscale than black participants.

Figure 3. The percentage of black, Asian and white participants above the cut-off scores on the subscale Body Dissatisfaction.

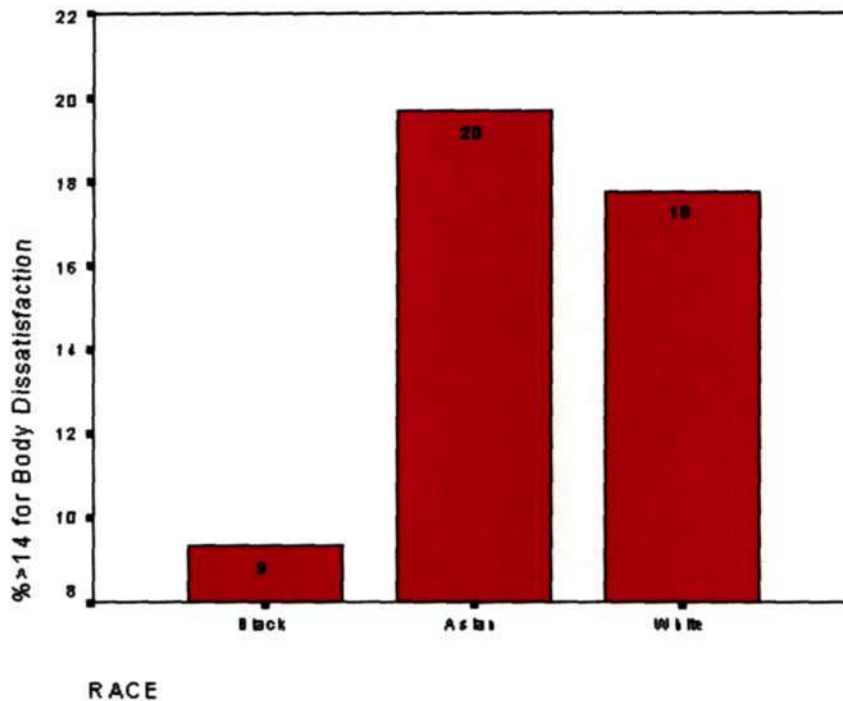


Figure 3 shows that Asian participants scored the highest on *Body Dissatisfaction* (20%), followed by the white participants (18%) and the lowest being the black participants (9%).

These results are consistent with studies by Wassenaar et al. (2000) and Marais et al. (2002) that black participants appeared to be more body satisfied than their white peers. These findings also support Geach (1995), who found that black participants had more favourable body images than white participants.

Figure 4. The percentage of black, Asian and white participants above the cut-off scores on the subscale Ineffectiveness.

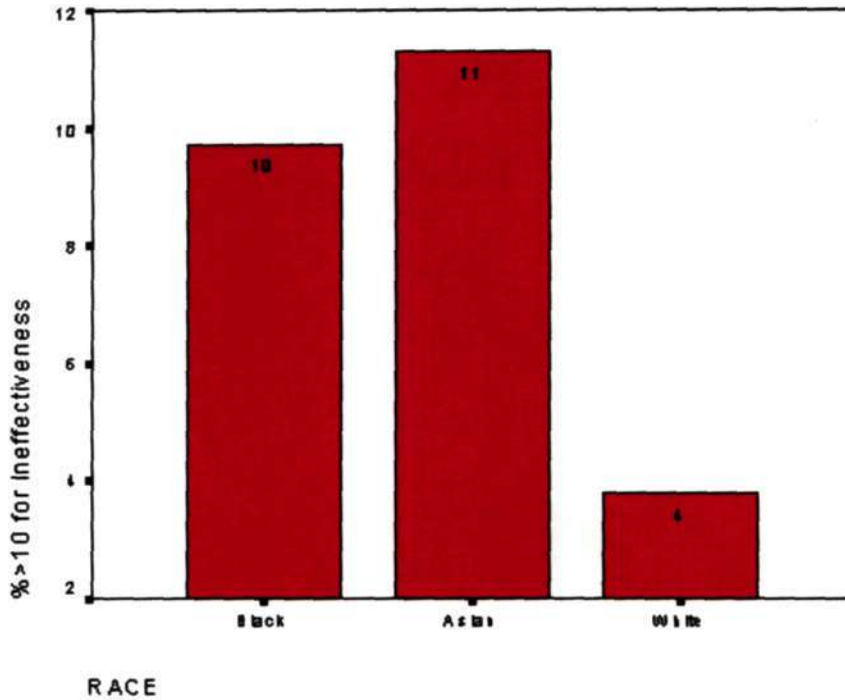


Figure 4 shows that Asian participants scored the highest on *Ineffectiveness* subscale (11%), followed by black participants (10%) and the lowest being white participants (4%).

These results are consistent with a study conducted by Lee, Lee, Leung and Yu (1995) on a Chinese sample, which also revealed high *Ineffectiveness* subscales (Garner et al., 1983).

These results differ from the studies by Wassenaar et al. (2000) and Marais et al. (2002), which indicated that white subjects scored higher on average than black participants on the *Ineffectiveness* subscale.

Figure 5. The percentage of black, Asian and white participants above the cut-off scores on the subscale Perfectionism.

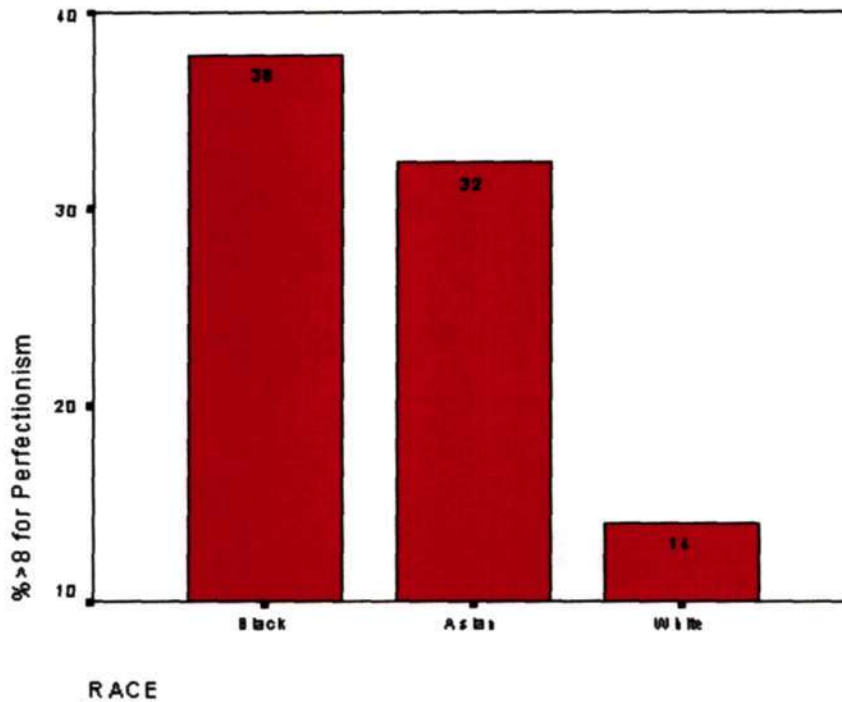


Figure 5 shows that black participants scored the highest on *Perfectionism* (38%), followed by the Asian participants (32%), and the lowest being the white participants (14%).

These high scores on *Perfectionism* for the black participants are consistent with the literature by Wassenaar et al. (2000) and Marais et al. (2002) who found high *Perfectionism* scores for black participants.

Figure 6. The percentage of black, Asian and white participants above the cut-off scores on the subscale Interpersonal Distrust.

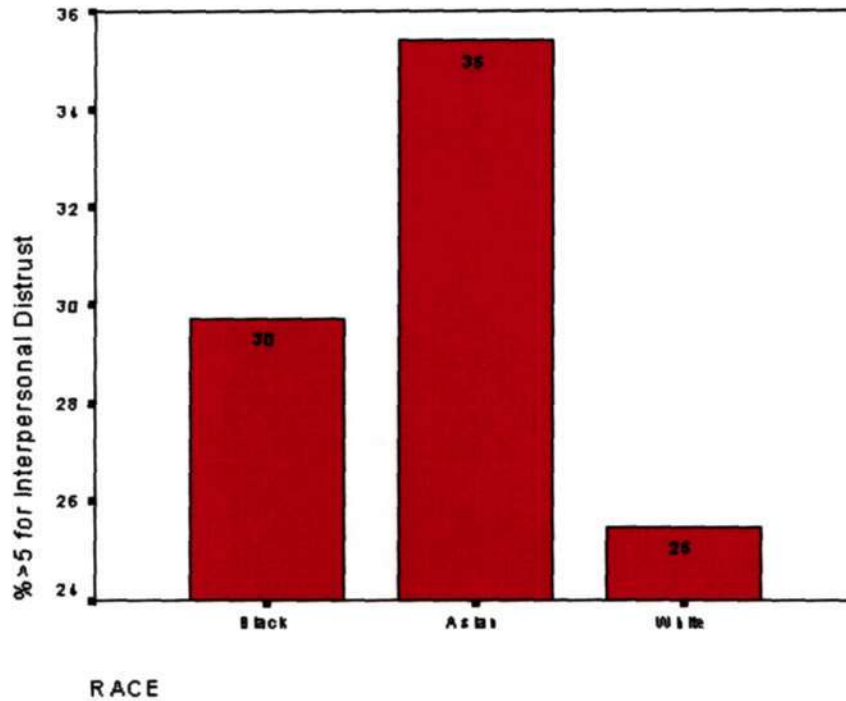


Figure 6 shows that Asian participants scored the highest on *Interpersonal Distrust* (35%), followed by black participants (30%) and the lowest being white participants (25%).

These results are consistent with results from Wassenaar et al. (2000) and Marais et al. (2002) where black participants also scored higher on *Interpersonal Distrust* than white participants.

Figure 7. The percentage of black, Asian and white participants above the cut-off scores on the subscale *Interoceptive Awareness*.

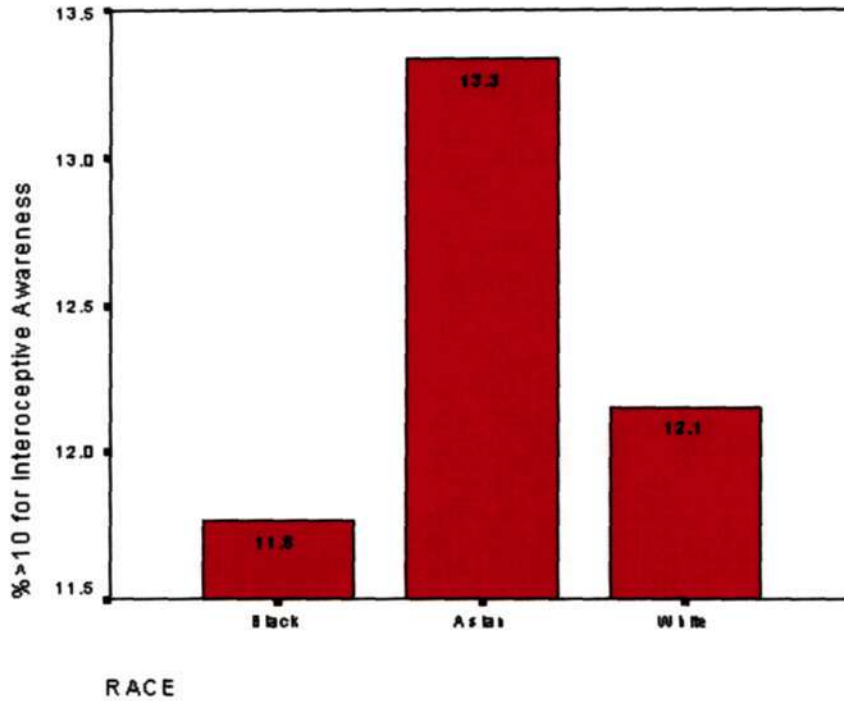


Figure 7 shows that Asian participants scored the highest on the *Interoceptive Awareness* subscale (13.3%), followed by white participants (12.1%) and the lowest being black participants (11.8%).

This is consistent with literature by Wassenaar et al. (2000) which also showed white participants scored higher than black participants on the *Interoceptive Awareness*.

Figure 8. The percentage of black, Asian and white participants above the cut-off scores on the subscale *Maturity Fears*.

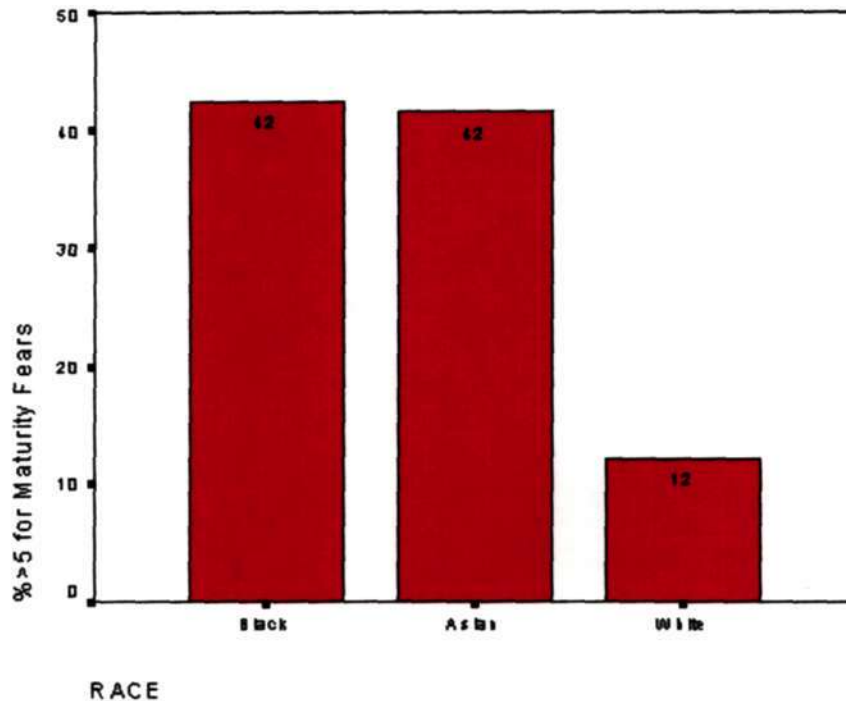


Figure 8 shows that black and Asian participants scored highest on *Maturity fears* (42%), followed by white participants (12%).

This is consistent with Wassenaar et al. (2000) and Marais et al. (2002) who found black participants scored higher on the *Maturity Fears* subscale than their white counterparts. The elevated *Maturity Fears* subscales for Asian participants is consistent with research conducted by Lee et al. (1997) on the Chinese population where there were also elevations on this subscale (Garner et al., 1983).

The differences in some of the subscales compared to previous studies by Wassenaar et al. (2000) and Marais et al. (2002) could be due to the smaller sample size, which may have caused skewed results.

The cut-off scores of the white and black participants have been compared to other studies (Marais et al., 2002; Wassenaar et al., 2000). However the Asian participants have not been the focus of investigation. They are however an important group to consider and will be discussed further in chapter 5.

In this study thus far the results of the whole sample (N=257) can be summarized as follows: The EDI showed good reliability in this study as it has on other South African studies (Marais et al., 2002; Wassenaar et al., 2000). The means were higher than the Canadian sample means. The comparison of means and subscale scores by race were generally higher than the Canadian sample. The black and white participants scored higher on the *Bulimia* subscale when compared to other South African studies by Wassenaar et al. (2000) and Marais et al. (2002). The proportional differences above the cut-off scores indicated that black, Asian and white participants all had a higher percentage above the cut-off scores on *Bulimia* as well as *Interpersonal Distrust* subscales. The black and Asian participants had a higher percentage above the cut-off scores on the subscales *Perfectionism* and *Interpersonal Distrust*.

4.3 PILOT VALIDATION OF THE EDI

The purpose of this research was a pilot validation of the EDI across cultures to determine if this is a viable design for a large-scale study. Of the whole sample (N=257), the highest 15 and lowest 15 scorers on the EDI were followed up and compared with a clinical interview. The validation design compares the results of EDI scores with clinical interviews to determine the match between the two. The hypothesis, as discussed in the previous chapter, is that for all participants, irrespective of their cultural background, a high EDI score will correlate with a positive diagnosis for an eating disorder in the clinical interview.

4.3.1 Cross tabulation: clinical rating and EDI rating

The cross tabulation was performed to determine the match between the clinical ratings and the EDI ratings.

Table VII
Cross tabulation: clinical rating and EDI rating

		EDI Rating		
		High	Low	Total
Clinical Rating	High Count	9	0	9
	% within	100%	0%	100.0%
	Clinical Rating			
	Adjusted Residual	3.8	-3.8	
Clinical Rating	Low Count	5	16	21
	% within	23.8%	76.2%	100.0%
	Clinical Rating			
	Adjusted Residual	-3.8	3.8	
Total	Count	14	16	30
	% within	46.7%	53.3%	100.0%
	Clinical rating			

This indicates that for the 30 subjects in the validation study, the clinical interview and EDI match is significant and we can be 95% certain that the value is higher than would be expected by chance. As can be seen in Table VII, of the sample of 30 participants who were interviewed for the validation study, 16 scored low on the EDI. This is 100% match with the clinical ratings. Fourteen of the participants scored high on the EDI. According to the clinical interview 9 of the 14 (64%) were correctly matched as high scorers and 5 of the 14 (35%) were incorrectly matched. All five of the incorrectly matched participants scored low on the clinical interview but were high on the EDI rating. The clinical interviews appeared to underestimate disordered eating habits or the EDI overestimated disordered eating habits. This gives a 64% correct match between high scorers on the clinical interview and high EDI ratings.

The 5 incorrectly matched participants as discussed above scored low on the clinical interview but were high on the EDI rating. These 5 incorrectly matched participants will be categorized by race group to determine the percentage error for black, Asian and white

participants respectively. Of the 8 black participants, there were 2 errors (25% error rate). Of the 7 Asians there were 2 errors (28.6% error rate). Of the 15 white participants there was 1 error (6.6% error rate). These results suggests that the clinical interview is more likely to correspond with high white EDI scorers and least likely to correspond with high Asian EDI scorers. A larger sample size however is indicated to confirm these error rates as the sample size for black (n=8) and Asian (n=7) participants is too small to be reliable.

4.3.1.2 An exploration of the incorrect clinical predictions on the clinical interview

Case 1 High on the EDI, low on the clinical interview

In the clinical interview, the Asian participant admitted to bingeing yet denied purging behaviour. As a result, she was not diagnosed as bulimic in the interview by the co-investigator as she did not fulfill the diagnostic criteria of bulimia nervosa, according to the DSM-IV (American Psychiatric Association, 2000). On the *Bulimia* subscale of the EDI, the participant obtained a high score. On closer analysis of the high items on the EDI the items are related to bingeing and not the purging behaviour. The items were as follows: "I eat when I am upset", "I have gone on binges when I felt I could not stop", "I think about bingeing (overeating)." A possible reason for this discrepancy between the EDI and clinical interview could be that the EDI does not appear to fully reflect the behavioural aspects of *Bulimia* especially purging, so a high score on the EDI requires bingeing alone which could contribute to false positives not fewer false negatives.

Case 2 High on the EDI, low on the clinical interview

In the clinical interview, the black participant said she could eat whatever she likes and is comfortable with her weight and shape. She did however appear to be ambivalent about her weight in her traditional setting, where being fatter is perceived as preferable and more sexually desirable. The co-investigator diagnosed her as having body dissatisfaction that appeared to be context dependant. The EDI scores produced a high score on the subscale *Drive for Thinness*. The items on this subscale were "I think about dieting", "I feel extremely guilty after overeating", "I am terrified of gaining weight", and "I am preoccupied with a

desire to be thinner.” Once again there appears to be a discrepancy between the clinical interview and the EDI prediction. A possible explanation could be that the participant is embarrassed about her desire to be thin as this contradicts her traditional belief structure. In addition there may be shame attached to admitting what she is actually feeling. In this case the EDI seemed to correctly identify *Drive for Thinness* and the clinical interview underestimated *Drive for Thinness*.

Case 3 & Case 4 High on the EDI, low on the clinical interview

Both black and Asian participants denied having body dissatisfaction in the clinical interview stating that they were satisfied with their present weight and shape. On the EDI, however they obtained high scores on the subscale *Body Dissatisfaction*. A possible reason for this discrepancy could be that the participants were embarrassed and reluctant to talk about sensitive issues relating to their weight and shape. In this case the EDI seemed to correctly identify *Body Dissatisfaction* and the clinical interview seemed to underestimate *Body Dissatisfaction*.

Case 5 High on the EDI, low on the clinical interview

In the clinical interview, the white participant obtained a low score on the subscale *Bulimia*. On the EDI, however she obtained a high score on the *Bulimia* subscale. The high items were as follows: “I eat when I am upset”, “I have gone on eating binges where I felt I could not stop”, “I have thought of trying to vomit in order to lose weight.” A possible explanation could be that the participant could be denying that she has bulimic tendencies because she is embarrassed as she denied any binge-purge behaviour in the clinical interview, claiming that she has a “block against vomiting.” In this case the EDI appeared to correctly predict *Bulimia* and the clinical interview appeared to underestimate *Bulimia*.

In summary in all five cases, the EDI gave a high rating whereas in the clinical interview the person was rated as low. The psychological subscales on the EDI, namely: *Ineffectiveness*, *Perfectionism*, *Interpersonal Distrust*, *Interoceptive Awareness* and *Maturity Fears* were often not explored in the clinical interview which may have resulted in the person being misdiagnosed as a low scorer when they were actually a high scorer. On the EDI subscales

Drive for Thinness, Bulimia and Body Dissatisfaction the participant scored high whereas in the interview the person received a low score on these subscales. There appeared to be withholding of information on the part of the participant when asked about these subscales. This could be due to embarrassment about speaking about eating disorders, which is a sensitive topic. The EDI subscale *Bulimia* may also need to be explored further to determine if it is accurately diagnosing bulimia nervosa as there are relatively few items identifying purging behaviour as there appears to be discrepancies between the EDI and clinical interview. This will be discussed in more detail in chapter 5.

The chi-square test (refer Table VIII below) was performed to determine the association between the two variables, namely EDI rating and clinical interview.

Table VIII
Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	14.694	1	.000

2 cells (50%) have an expected count less than 5. The minimum expected count is 4.20.

Before continuing, one of the chi-square assumptions is that for X^2 analysis with 1 *df*, the expected frequency in all cells should at least be equal to or greater than 5. If *N* is small, the expected frequency in each cell is less than five and “the sample statistic may not approximate the theoretical X^2 distribution very closely”(Burns, 2000, p. 222). In this study the chi-square returned a *p* less than .000 ($X^2= 14.694$; *df* 1), which is significant at an alpha level of 0.05. However, 2 cells had an expected count of less than 5, violating the expected count assumption. Although the expected count assumption of the chi-square was violated there is a strong association between observed and expected counts, indicating that the clinical interview and EDI match is significant. This will be discussed in more detail below.

4.3.2 The relationship between observed and expected counts

As the chi-square returned a significant value at an alpha level of 0.05, the adjusted standard residual was analyzed to determine the degree of relation between the expected value and the observed value. In the case of the standard normal distribution, the high and low scorers on the EDI fell outside of the level of significance 1.96/-1.96. This indicates that the adjusted standard residuals were significant, falling in the tails of the normal distribution curve. The scores were 3.8 and -3.8. This means that there was a greater significance where the high scorers and clinical rating were high (3.8) and the significance level was less than expected by guessing (-3.8), where the level of significance level is 1.96/-1.9 (Durrheim, 1999). These results suggest that we can be 95% certain that the ratings obtained by the clinical interviews and the EDI scores were not obtained by chance. This suggests that both the EDI and clinical interviews are useful measures of disordered eating and that there is a high correlation when used in combination.

4.3.3 Strength of association: Kendall's tau

Kendall's tau was performed to determine the strength of the association of the clinical rating and EDI rating.

The clinical rating and EDI rating produced a Kendall's tau of .700 indicating a strong positive association. This means that the association between the clinical rating and the EDI rating were highly correlated, indicating that the EDI rating and clinical rating were well matched.

4.4 ADDITIONAL COMPARISONS

4.4.1 Cross tabulation: clinical rating and race

The cross tabulation was performed to determine the match between the clinical ratings and race.

Table IX
Cross tabulation: clinical rating and race

		Race			Total
		White	Black	Asian	
Clinical Rating	High Count	5	1	3	9
	% within Race	33.3%	12.5%	42.9%	30.0%
	Low Count	10	7	4	21
	% within Race	66.7%	87.5%	57.1%	70.0%
Total	Count	15	8	7	30
	% within Race	100.0%	100.0%	100.0%	100.0%

The above table indicates that there were 33.3% white, 12.5% blacks and 42.9% Asians who received high clinical ratings and there were 66.7% whites, 87.5% blacks and 57.1% Asians who received low clinical ratings.

The chi-square test was performed to determine the association between the two variables, namely clinical rating and race. The chi-square test is presented in Table X below:

Table X
Chi-square test, clinical rating and race

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	1.797(a)	2	.407

a 4 cells (66.7%) have expected count less than 5. The minimum expected count is 2.10.

The chi-square returned a p of .407 ($X^2 = 1.797$; $df 2$), which is not significant at an alpha level of 0.05. Four cells (66.7%) had an expected count of less than 5, violating the expected Count assumption. This indicates that there is no relationship between the clinical rating and race. There are as many black, Asian and white high and low scorers on the clinical rating as would be expected by chance.

Although BMI was not required for the primary validation, it was obtained from each participant at the end of the clinical interview and was therefore used as an additional means of validation. Additional comparisons were performed to determine the match between the clinical rating and the BMI rating as well as the EDI rating and the BMI rating to determine if these might be effective methods of cross-cultural validation of the EDI in the South African context.

4.4.2 Cross tabulation: clinical rating and BMI rating

The association between the clinical rating and the BMI rating is summarized in Table XI below.

		BMI		
		Pathological	Normal	Total
Clinical Rating	High Count	5	4	9
	% within Clinical Rating	55.6%	44.4%	100.0%
	Adjusted Residual	2.0	-2.0	
	Low Count	4	17	21
	% within Clinical Rating	19.0%	81.0%	100.0%
	Adjusted Residual	-2.0	2.0	
Total	Count	9	21	30
	% within Clinical Rating	30.0%	70.0%	100.0%

The above table (Table XI) indicates that there was a 55.6% match between the pathological scorers on the BMI rating and the high scorers on the clinical interview. There was an 81.0% match between normal BMI rating and low scorers on the clinical interview.

The chi-square test was performed to determine the association between the clinical interview and BMI rating. The chi-square test is presented in Table XII below:

Table XII
Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	3.998	1	.046

1 cell (25.0%) had an expected count of less than 5. The minimum expected count is 2.70.

The chi-square returned p of .046 ($X^2 = 3.998$; $df 1$), which is significant at an alpha level of 0.05. However, 1 cell had an expected count of less than 5 violating the expected count assumption. With such a small p value the assumption can be made that a bigger sample would have a similar significance finding. Although there is a low expected count, the clinical interview and BMI match is significant and has a higher value than would be obtained by chance.

4.4.3 Cross tabulation: EDI rating and BMI rating

The association between the EDI rating and BMI rating is summarized in Table XIII below.

Table XIII
Cross tabulations: EDI rating and BMI rating

		BMI		
		Pathological	Normal	Total
EDI Rating	High Count	6	8	14
	% within EDI Rating	42.9%	57.1%	100.0%
	Low Count	3	13	16
	% within EDI Rating	18.8%	81.3%	100.0%
Total	Count	9	21	30
	% within	30.0%	70.0%	100.0%

The above table indicates that there was a 42.9% match between the pathological scorers on the EDI rating and the high scorers on the BMI. There was an 18.8% match between low EDI rating and normal scores on the BMI.

The chi-square test is presented in Table XIV below:

Table XIV
Chi-square test

	Value	<i>df</i>	Asymp. Sig. (2-sided)
Pearson chi-square	2.006	1	.151

2 cells (50%) have expected count less than 5. The minimum expected count is 4.20.

Although the EDI rating and BMI match in the cross tabulation (Table XIV above) was 42.9 % and the EDI rating match to the normal BMI rating was 81.3%, the Chi Square returned a *p* of .151 ($X^2 = 2.006$; *df* 1), which is not significant at an alpha level of 0.05. Two cells have an expected count of less than 5. This indicates that the association between the EDI rating and BMI rating is not significant. The BMI rating and EDI ratings are therefore not useful means of comparison as there is no significant association between them. This suggests that the EDI scores do not correlate with the BMI scores

In conclusion, the match between the EDI rating and the clinical interviews appears to be the most significant association, followed by the association between clinical interview and BMI rating.

4.4.4 The strength of the association: Kendall's tau

Kendall's tau was performed to determine the strength of the association of the clinical rating and the BMI rating as well as the EDI rating and the BMI rating.

The clinical rating and BMI rating produced a Kendall's tau of .365, which is significant but not a strong response. This means that the association between the clinical rating and the BMI rating was not strongly correlated, indicating that the BMI rating and clinical rating

were not as well matched as the association between the clinical rating and EDI rating which produced a Kendall's tau of .700.

The EDI rating and BMI rating produced a Kendall's tau value of .262, which is not significant. This means that there is no significant association between the EDI and BMI.

4.4.5 Cross tabulation: EDI rating and race

The cross tabulation was performed to determine the match between the EDI Ratings and Race.

Table XV
Cross tabulation: EDI rating and race

		Race			
		White	Black	Asian	Total
EDI Rating	High Count	6	3	5	14
	% within Race	40.0%	37.5%	71.4%	46.7%
	Low Count	9	5	2	16
	% within Race	60.0%	62.5%	28.6%	53.3%
Total	Count	15	8	7	30
	% within Race	100.0%	100.0%	100.0%	100.0%

The above table indicates that there were 40.0% white, 37.5% blacks and 71.4% Asians who received a high EDI Rating and there were 60.0% whites, 62.5% blacks and 28.6% Asians who received a low EDI Rating.

The chi-square test was performed to determine the association between the two variables, namely EDI Rating and Race. The chi-square test is presented in Table XVI below:

Table XVI
Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	2.262(a)	2	.323

a 4 cells (66.7%) have expected count less than 5. The minimum expected count is 3.27

As shown in Table XVI, the chi-square returned a *p* of .323 ($X^2 = 2.262$; *df* 2), which is not significant at an alpha level of 0.05. Four cells (66.7%) had an expected count of less than 5 violating the expected count assumption. This indicates that there is no relationship between the EDI rating and race. This means that there are not significantly more higher or low scorers from the various ethnic groups than would be expected by chance.

4.4.6 Cross tabulation: BMI (pathological/normal) and race

The cross tabulation was performed to determine the match between BMI (pathological/normal) and race.

Table XVII
Cross tabulation: BMI (pathological/normal) and race

		Race			Total
		White	Black	Asian	
BMI (pathological/ normal)	High Count	4	3	2	9
	% within Race	26.7%	37.5%	28.6%	30.0%
	Low Count	11	5	5	21
	% within Race	73.3%	62.5%	71.4%	70.0%
Total	Count	15	8	7	30
	% within Race	100.0%	100.0%	100.0%	100.0%

The above table (Table XVII) indicates that there were 26.7% white, 37.5% blacks and 28.6% Asians who received high BMI (pathological/normal) ratings and there were 73.3% whites, 62.5% blacks and 71.4% Asians who received low BMI (pathological/normal) ratings.

The chi-square test was performed to determine the association between the two variables, namely BMI (pathological/normal) rating and race. The chi-square test is presented in Table XVIII below:

Table XVIII
Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	.300(a)	2	.861

a 4 cells (66.7%) have expected count less than 5. The minimum expected count is 2.10.

As shown in Table XVIII, the chi-square returned a p of .861 ($\chi^2 = .300$; $df = 2$), which is not significant at an alpha level of 0.05. Four cells (66.7%) had an expected count of less than 5, violating the expected count assumption. This indicates that there is no relationship between BMI (pathological/normal) rating and race. This means that there are not significantly more high or low BMI scorers from the various ethnic groups than would be expected by chance.

4.5 SUMMARY

4.5.1 The larger sample (N=257)

- (1) The 64 EDI items produced a Cronbach's Alpha of .9314, which indicates that the EDI is a highly reliable instrument and that the items are highly correlated.
- (2) The EDI means were generally higher than the Canadian sample means.
- (3) A comparison of the mean subscale scores by race was higher than the Canadian sample.
- (4) A comparison of the means and standard deviations of three studies revealed the following: This study, compared to other studies by Marais et al. (2002) and Wassenaar et al. (2000), scored higher on the subscale, *Bulimia* and the psychological dimensions *Ineffectiveness*, *Interpersonal Distrust* and *Interoceptive Awareness*.

- (5) The means for the black and Asian participants on the subscales *Drive for Thinness* and *Body Dissatisfaction* were lower than the Canadian sample. However the means for black and Asian participants on the other subscales were higher than the Canadian sample. The means for the white participants were higher than the Canadian sample on all the subscales with the exception of *Body Dissatisfaction* and *Perfectionism*, which were lower.
- (6) The results differ from previous studies by Wassenaar et al. (2000) and Marais et al. (2002) where the white participants received the highest scores on the *Bulimia* subscale. There are overall high *Bulimia* subscales scores in this study across ethnic groups. This could indicate an increase in bulimia nervosa across race groups or the results could be skewed due to the small sample size.

4.5.2 The pilot validation comprising (n=30) participants

- (1) Though plagued by low expected counts there is a significant association between clinical interviews and EDI ratings ($p=0.0001$).
- (2) The adjusted standard residuals determined the degree of association between the expected value and the observed value. Although there are low expected counts, the results suggest that both the EDI and clinical interviews are useful measures of disordered eating and that there is a high correlation between them.
- (3) The clinical rating and EDI rating produced a Kendall's tau of .700 indicating a strong positive association. This means that the association between the clinical rating and EDI rating were highly correlated and were well matched.
- (4) The error rate across race groups for high scorers on the EDI who scored low on the clinical interview were as follows: 6.6% error rate for white participants, 28.6% error rate for Asian participants and 25% error rate for black participants. The sample size for black (n=8) and Asian (n= 7) participants was however too small to be reliable.
- (5) The cross tabulation of EDI rating and BMI were not well matched suggesting that the BMI is measuring something else and is not useful in the overall validation study.

These findings will be further discussed in the following chapter.

CHAPTER 5

DISCUSSION

This chapter is a discussion of the results that were presented in Chapter 4. The results will be discussed with reference to the original hypotheses and literature review in Chapter 2. It will focus on two areas, namely a descriptive analysis followed by the validation study. The descriptive analysis will be of the whole sample (N=257), black, white and Asian participants. The EDI subscale scores of the sample will be compared with each other and the Canadian norms. Secondly, the overall EDI score will be compared to the clinical interviews to determine the match between the two, with the aim being to determine if this is a viable method for a pilot validation of the EDI.

5.1 THE EDI SUBSCALES

5.1.1 Mean subscale scores

The EDI subscales identify “psychological and behavioural traits common in anorexia nervosa and bulimia” (Garner et al., 1983, p.1). Scores on these subscales above the cut-off scores indicate attitudes, behaviours and traits associated with eating disorders as well as sub-clinical eating disorders, rendering these individuals high risk. Although the EDI has proved a useful screening tool, it is not recommended as a stand-alone diagnostic instrument (Garner & Olmstead, 1984).

The first three subscales, *Drive for Thinness*, *Bulimia* and *Body Dissatisfaction* are measures of disordered eating. The remaining five subscales, namely *Ineffectiveness*, *Perfectionism*, *Interpersonal Distrust*, *Interoceptive Awareness* and *Maturity Fears* are measures of psychological variables associated with disordered eating. A cross-cultural comparison is helpful in identifying vulnerabilities of different race groups to aspects and the presentation of disordered eating (Garner & Olmstead, 1984).

Compared with the Canadian sample (Garner & Olmstead, 1984), the present South African sample was higher on all the subscales of the EDI except on the subscales of *Body Dissatisfaction* and *Perfectionism*. Previous research (Marais et al., 2002; Wassenaar et al., 2000) had similar findings. The results of the study by Marais et al.

(2002) indicated that there was a higher prevalence of eating pathology amongst black men than white men, which challenged the assumption that non-Western individuals are protected from disordered eating patterns. Wassenaar et al. (2000) showed significant eating pathology in women across ethnic groups, which challenges the notion that eating disorders are confined to Western societies.

5.1.2 Comparison of mean subscale scores by race

5.1.2.1 Drive for thinness

White subjects in this study scored significantly higher than other race groups on the *Drive for Thinness* subscale; followed by Canadian, Asian and then black sample. Several studies conducted on college students in the USA found that compared to black women, white women place more restrictive standards on themselves and are influenced by the media to attain a thin body image ideal (Edwards et al., 2003). This is supported by O'Neill, (2003), in a study comparing white and African American women as well as by Hooper and Garner, (1986), where the EDI was administered to a sample of black, white and mixed race schoolgirls in Zimbabwe. The findings indicated that the white participants scored higher on *Drive for Thinness* and appeared to have more anorexic type eating disturbances than the black and mixed race groups (Hooper & Garner, 1986).

5.1.2.2 Bulimia

On the *Bulimia* subscale, the Asian sample obtained the highest scores followed by the black and then the white sample. The lowest scores were the Canadian sample. This is consistent with previous findings by Striegel-Moore, Wilfley, Pike, Dohm and Fairburn, (2000) that African American women experience more recurrent binge eating than white women (O'Neill, 2003). Although there were differences in means between the different race groups in this study, these were negligible, indicating that bulimia nervosa is a general phenomenon across race groups. The *Bulimia* means of this sample compared to the Canadian sample and previous studies by Wassenaar et al. (2000) and Marais et al. (2002) are significantly higher. According to Garner and Olmstead (1984) bulimia nervosa is associated with psychological traits that have been described as fundamental in the development of these disorders. Although Marais et al. (2002, p. 2) suggest that "the greatest risk of developing eating disorders

affects acculturated groups seeking affirmation from the dominant group”, the findings in this study suggest that eating disorders and more especially bulimia nervosa is a generalised phenomenon across racial groups. In the past, anorexia nervosa has been perceived as the primary eating disorder, and has been the source of focus. As a result bulimia nervosa and binge eating disturbances may have been overlooked (O’Neill, 2003).

5.1.2.3 Body dissatisfaction

The Canadian sample had the highest scores for *Body Dissatisfaction* followed by the Asians and whites in the current study. The lowest scorers were the black participants in this study. This is confirmed in a study by Marais et al. (2002) indicating that black women experience less social pressure about their weight, and appear to be more weight tolerant having a more flexible body image than white women. Further studies by Wassenaar et al. (2000) and Malcolm, Hooper and Garner (1986) suggest that *Body Dissatisfaction* is more prevalent amongst the white group. This is confirmed by literature (Altabe, 1998; Cash & Henry, 1995; Smith, Marcus, Lewis, Fitzgibbon & Schreiner, 1998) “that consistently shows that African American women have much lower levels of body-image dissatisfaction when compared to white women” (O’Neill, 2003, p.5).

5.1.2.4 Psychological variables

The black and Asian group means in this study were highest on the psychological dimensions (namely: *Perfectionism, Interpersonal Distrust, Interoceptive Awareness* and *Maturity Fears*) of eating disorders and the white participants had the lowest means on all the psychological subscales. The psychological dimensions will be discussed further below.

5.1.2.5 Black participants

Black participants in this study scored highest on two of the psychological subscales associated with eating disorders, namely: *Perfectionism, Interpersonal Distrust* and *Interoceptive Awareness* compared to the rest of the group as well as the Canadian sample. This is consistent with the findings by Edwards et al. (2003) that black subjects are more vulnerable to psychological factors associated with eating disorders.

These high scores may suggest that black women have increased pressure to achieve and prove themselves, as they no longer have the constraints of the apartheid years.

According to previous studies by Hooper and Garner (1986) and Wassenaar et al. (2000), the high *Perfectionism* scores could reflect a concern to achieve in order to gain university admission after the social, political and educational restraints that were placed on black persons during the Apartheid years in South Africa. As this study is also a university sample, it may be presumed that these students have similar pressures to achieve and prove themselves in a changing South African context. The high *Maturity Fears* could reflect that the responsibilities facing black women may be quite overwhelming for them (Wassenaar et al., 2000). The high *Interpersonal Distrust* scores could suggest a sense of alienation and reluctance to form close relationships (Marais et al., 2002).

5.1.2.6 Asian participants

The Asian group scored highest on *Ineffectiveness* and *Maturity Fears* subscales. These high subscale scores will be analysed with reference to the Chinese culture, as there appear to be similarities between them, in that both groups appear to struggle for independence and autonomy within a rigid family structure. Their youth are insecure and unsure of their ability to cope outside of the family structure. A study conducted by Lee et al. (1997) found that the Chinese culture reflected high cohesive child-parent relationships where strong intergenerational dependence and community rather than the individual is valued. Young people who grow up in such an environment have a fear of maturing, becoming independent and developing a sense of autonomy that is reflected in the high *Maturity Fears* subscale. The Chinese sample also had high scores on the *Ineffectiveness* subscale that “assesses feelings of general inadequacy, insecurity, worthlessness and feeling of not being in control of one’s life” (Garner et al., 1983, p. 18).

5.1.3 Comparative means and standard deviations of three studies

In previous studies by Marais et al. (2002) and Wassenaar et al. (2000) the means for *Drive for Thinness* and *Body Dissatisfaction* subscales are significantly higher and the *Bulimia* subscale is significantly lower across racial groups compared to this study. As discussed above, the pressure to achieve and perform add additional stresses to

contemporary youth of today. The psychological component attached to bulimia nervosa results in it being used as a vehicle through which emotional distress is expressed. The increase in bulimia nervosa could reflect a change in eating disorders and that this sample is under extreme pressure to achieve and excel in a culture that places emphasis simultaneously on being thin and consuming of luxury foods for enjoyment. The smaller sample size (N=257) could have resulted in skewed results. A larger sample size may have reflected similar findings to Wassenaar et al. (2000)(N=628).

In this study the means for *Ineffectiveness* were higher for both the black and white participants, and the black participants' means for *Interpersonal Distrust* and *Interoceptive Awareness* were higher than the means of the studies by Marais et al. (2002) and Wassenaar et al. (2000). The means for *Perfectionism* were highest in the study by Wassenaar et al. (2000) and the means for *Maturity Fears* were the highest in the study by Marais et al. (2002). This study reflects high overall means for three of the psychological subscales, which may suggest that there is an increase in the psychological dimensions of eating disorders. This potentially shows that youth who have been through a process of acculturation and embrace Western norms may feel overwhelmed by the new challenges.

5.1.4 Pearson's correlation between subscales

On analysis of the subscales it is evident that there are no negative relationships between subscales only positive relationships. As one subscale increases so do the others. *Interoceptive Awareness* is strongly positively correlated to both the pathological and psychological subscales: *Drive for Thinness*, *Bulimia*, *Ineffectiveness* and *Interpersonal Distrust*. According to Garner and Olmstead (1984, p.5) *Interoceptive Awareness* reflects an individual's "lack of confidence in recognising and accurately identifying emotions or visceral sensations of hunger or satiety." This lack of awareness of bodily needs and the inability to distinguish between emotion and hunger could be a result of a hurried and stressed lifestyle, which overrides physical signals. The inability to distinguish between emotions and hunger may result in restrictive eating patterns, bingeing and purging behaviour. Feelings of being ineffective and lack of trust in others are factors that may serve to exacerbate eating

pathology. These correlations serve to emphasise the complex interplay between mind and body that may contribute to an individual becoming vulnerable to eating disorders.

The three subscales of disordered eating *Drive for Thinness*, *Bulimia* and *Body Dissatisfaction* are also strongly correlated, i.e., an increase in one subscale is accompanied by similar increases in the others.

5.1.5 Proportional differences above cut-off points

The blacks (32%), Asians (27%) and whites (31%) had a high percentage above the cut-off score on *Bulimia*. As previously discussed, bulimia nervosa appears to be a growing problem across racial groups. As there is increased pressure to achieve and perform, young people are exposed to additional pressures that may appear overwhelming. On the subscale *Perfectionism* the black (38%) and Asian (32%) groups scored higher relative to the white group. Wassenaar et al. (2000) argued that the high *Perfectionism* scores may be related to the need for high achievement in order to obtain a university admission following removal of the constraints of the apartheid years. On the *Interpersonal Distrust* subscale, all three groups: blacks (30%), Asians (35%) and whites (25%) received high scores. On the *Maturity Fears* subscale, the scores were: blacks (42%) and Asians (42%), which might indicate that the responsibilities facing black and Asian women may be “perceived as more arduous in general than those facing white women in South Africa” (Wassenaar et al., 2000, p.233). These results seem to suggest that bulimia nervosa and the psychological subscales of *Perfectionism*, *Maturity Fears* and *Interpersonal Distrust* are associated, which is consistent with the findings of Garner and Olmstead (1984).

5.2 THE PILOT VALIDATION

5.2.1 An adjustment in methodology to fulfil chi-square assumption

The aim of this research, as previously discussed, is towards the pilot validation of the EDI to determine if it is cross-culturally valid and can be used with confidence in South Africa in the assessment of eating disorders. The validation comprised three steps, firstly the collecting and scoring of the EDI questionnaires, secondly coding of the EDI questionnaires into high and low scorers (see Section 3.6.2.) and thirdly

conducting clinical interviews to determine the match between the EDI categories and clinical interviews for the high and low scoring subgroups.

Although we had hoped to have three categories: high, marginal and low scorers the number of cases in each cell was less than five, which is insufficient for statistical analysis (chi-square analysis). The interviews and EDI scores were therefore recoded to form two categories: high and low scorers.

Definition were as follows:

- (1) The high category was an EDI score of 60 and above.
Or
One of the first three subscales and two or more on the psychological subscales
Or
More than one of the first three clinical subscales.
- (2) Low category is a score of 59 or below
Or
None or one of the other eight EDI subscale categories.

The criteria for assessment of eating disorders in the clinical interview were based on the DSM-IV (American Psychiatric Association, 2000) criteria of eating disorders and participants requiring referral, further assessment or follow-up.

Once the EDI questionnaires were coded, the highest 15 and lowest 15 scorers on the EDI were contacted for a clinical interview. The co-investigator went into the interviews 'blind', in other words not aware of the participants' EDI scores. After conducting the clinical interviews, each participant was categorised as either high or low scorers on the EDI. The match between the EDI and clinical interview was then determined.

5.2.2 Cross tabulation: clinical rating and EDI rating

A cross tabulation comparing the EDI rating and the clinical ratings only partially confirmed our hypothesis that:

That all participants with a high EDI score, irrespective of their cultural background, correlated with a positive diagnosis for an eating disorder in the clinical interview.

The results indicated a 100% match between the low scorers on the EDI and the low scorers on the clinical interview. This means that the interviewer was able to correctly diagnose those individuals who did not have any eating pathology or that the EDI was able to identify those individuals who did not have any eating pathology. There was a 64% match between the high scorers on the EDI and high scorers on the clinical interview. This means that the interviewer was only able to correctly diagnose those candidates who had eating disorders 64% of the time, or that the EDI was not accurately identifying eating disordered individuals. The overall results indicated that there is an 82% match between EDI ratings and clinical interviews. The error rate was highest for Asian participants (28.6% error rate) and lowest for white participants (6.6% error rate) which suggests that agreement between the clinical interview and EDI is greatest for white high EDI scorers and lowest for Asian high EDI scorers. (The five incorrectly matched participants have been discussed in detail in section 4.3.1.2. of the previous chapter).

A number of statistical tests were performed to determine the significance of the relationship of the EDI rating and clinical interview.

The chi-square test was performed to determine the significance of the relationship of the EDI rating and the clinical rating. There did appear to be a significant match between the two at an alpha level of 0.05, which suggests that we can be 95% certain that the relationship was not obtained by chance. There was a high correlation between the observed values and expected values as discussed in the previous chapter. Kendall's tau revealed a strong association between the clinical rating and the EDI rating. They were highly correlated and well matched (see Section 4.2.3.). The above statistical tests suggest that the EDI and clinical interviews can confidently be use in combination as there is a strong correlation between them. The two instruments used together are a viable research design for a large-scale validation study across ethnic groups.

5.3 ADDITIONAL COMPARISONS

A number of other statistical tests were performed to determine the match between the Clinical rating and race, EDI rating and BMI rating. Kendall's tau was conducted to determine the strength of the association of Clinical rating to BMI rating. Cross tabulations were performed to determine the correlations between EDI rating and race and BMI rating and race. The results are described below:

5.3.1 Cross tabulation of clinical rating and race

The results of the cross tabulation show that the clinical rating and race are not associated and the chi-square analysis revealed that there is no significance between the two factors. This means that any variation in the clinical ratings cannot be attributed to a particular ethnic group. A reason for this could be the small sample size used, which could have produced skewed results. A further larger study may reveal an association, which would be useful to make predictions determining race groups that are vulnerable to eating disorders.

5.3.2 EDI rating and BMI rating

The results in the previous chapter indicated that the match between the EDI and the BMI is not statistically significant. Although the EDI and BMI may be used separately as instruments in the assessment of eating disorders, they are incomplete as diagnostic instruments to diagnose eating disorders alone and clearly measure different dimensions of eating disorders. They should ideally to be used in combination with a clinical interview.

5.3.3 The strength of the association: Kendall's tau

The clinical rating and BMI rating produced a Kendall's tau of .365, a significant result although not strong. The implications for this study is that despite the association between the clinical interview and the BMI, the correlation is not sufficient, suggesting that they evaluate different dimensions of eating disorders. The EDI rating and BMI rating returned a Kendall's tau value of .262, which is not significant.

One can conclude that the EDI is more useful when used in association with a clinical interview than when used with the BMI, as indicated above.

5.3.4 Cross tabulation of EDI rating and race and BMI and race

The EDI rating and race correlation as well as the BMI and race correlation showed no significant relationship, which means that the EDI and race and the BMI and race correlations measure different dimensions of eating disorders. These results may have revealed different findings if the sample size had been larger.

5.4 MAJOR SHORTCOMINGS

5.4.1 Chi-square test

The chi-square test was chosen as it is a “goodness-of-fit test” which assesses observed proportions of a sample fit into expected proportions of the sample (Burns, 2000, p. 213). The chi-square test is applied to determine whether the difference between the observed and expected proportions “is likely to be a function of sampling error (non-significant) or unlikely to be a function of sampling error (significant association)” (Burns, 2000, p. 213). One of the restrictions of the chi-square test is that the expected frequency in each cell should be equal to or greater than 5. This assumption was continually violated due to low expected counts, which weakens the analysis. In an attempt to fulfil the expected counts for each cell, the category of marginal scorers was omitted and the data was collapsed from three categories (high, marginal and low scorers) into two categories, namely high and low scorers. The expected count in each cell was still less than 5, which violated the count assumption.

In the case of a further validation study, a larger sample size is indicated so that the conditions for the chi-square test will be met.

5.4.2 The clinical interview

The incorrect clinical predictions appear, on the surface, to contradict the suggestion that clinical interviews yield more valid data (Ghaderi & Scott, 2002; Kutlesic et al., as cited in Martin et al., 2000) (see Section 2.14). The method used for interviewing participants should be critically reviewed to maximise the effectiveness of the

interviewing process. As discussed in Section 3.5.2, the clinical interview was guided by the EDE, but the EDE was not strictly followed. In the case of further research, training in this instrument may assist in the accuracy of the interviewing process and identifying eating pathology. The first three EDI subscales, namely *Drive for Thinness*, *Bulimia* and *Body Dissatisfaction* were the focus of the interviews. Although these three subscales have been identified as important in the clinical diagnosis of eating disorders the remaining five subscales have been identified as fundamental in identifying aspects of the psychopathology of anorexia nervosa. The five subscales are: *Ineffectiveness* (assesses feelings of inadequacy, insecurity, feelings of worthlessness and feelings of not being in control of one's life), *Interpersonal Distrust* (reflects a sense of alienation and general reluctance to form close relationships and has been identified as important in the development and maintenance of anorexia nervosa) (Goodsitt, 1969,1977; Selvini-Palazzoli, 1978; Story, 1977; Strober, 1980). *Interoceptive Awareness*, (reflects lack of confidence in recognizing and accurately identifying emotions and sensations of hunger or satiety). *Perfectionism* (indicates excessive personal expectations for superior achievement) and *Maturity Fears* (measures wish to retreat to the security of the preadolescent years because of the overwhelming demands of adulthood) (Garner et al., 1983). These 5 subscales are of vital importance in the assessment of eating disorders and questions to identify these subscales should in future research be included in the interviewing.

5.3 SUMMARY

Before summarising the most important findings of this research study the aims, research method and hypotheses will be highlighted. The aim of the study was a pilot cross-cultural validation of the EDI. The 257 EDI questionnaires were scored and categorised into low and high scorers. The highest 15 and lowest 15 EDI scorers were contacted and interviewed. The match between the EDI score and the clinical interview was calculated to determine the validity of the EDI cross-culturally. The hypothesis was as follows: That in all participants, irrespective of their cultural background, a high EDI score will correlate with a positive diagnosis for an eating disorder in the clinical interview.

A summary of the most important findings is as follows:

- (1) The EDI was found to be a highly reliable instrument with a Cronbach Alpha of .9314. The subscales were also found to be reliable and produced a Cronbach Alpha of .82. This means that the EDI items are highly correlated and relate to each other.
- (2) The overall match of the highest 15 and lowest 15 EDI scorers and clinical interviews was 82%. There was 100% match between the low EDI scorers and the low scorers on the clinical interview. There was however a 64% match between the high scores on the EDI and high scorers on the clinical interview.
- (3) Although plagued by low expected counts there is a significant association between clinical interviews and EDI ratings. The Kendall's tau test produced a strong association between clinical ratings and EDI ratings. These statistical instruments confirm that the EDI and clinical interviews are well matched and are suitable to be used in combination in a large-scale validation study.
- (4) The hypothesis that in all participants, irrespective of their cultural background, a high EDI score will correlate with a positive diagnosis for an eating disorder in the clinical interview was not fulfilled. The overall results indicated that there is an 82% match between EDI ratings and clinical interviews. The error rate was highest for Asian participants (28.6% error rate) and lowest for white participants (6.6% error rate)
- (5) Eating disorders were traditionally perceived as white Western phenomena however the results of this study suggest that there is an increase in eating disorders across ethnic groups.
- (6) All three ethnic groups, namely black, Asian and white groups received high scores on the bulimia. These results suggest that bulimia nervosa is of growing concern in acculturated groups and requires further investigation.

5.3.1 Limitations of the research

- (1) The study was based on a relatively small sample of university students and therefore does not reflect the general population of South Africa. The results may be skewed, reflecting university culture alone and not necessarily true cultural differences.
- (2) The number of black, Asian and white participants who were interviewed were not proportionate to the other race groups, nor were there sufficient

numbers of participants from each race group to reliably predict the rate of error: high EDI score and low clinical rating for each race group.

- (3) Although interviews are perceived as the ideal assessment tool in eating pathology, they may be more threatening and favour to a questionnaire such as the EDI being used as it allows the person to remain relatively anonymous.
- (4) The clinical interview was guided by the EDE but did not formally follow the EDE.
- (5) The psychological subscales were often not explored sufficiently in the clinical interview. Although the EDI appeared to predict *Drive for Thinness*, *Bulimia* and *Body Dissatisfaction*, participants received low scores on these subscales when interviewed.

5.3.2 Suggestions for further research

- (1) The interview should be guided by all 8 EDI subscales and specific questions around each subscale should be asked in order to more accurately predict the scores on the specific EDI subscales.
- (2) The same proportion of black, Asian and white participants should be used in further studies.
- (3) Given the similarities between white South African and international validation studies it would be of benefit in further studies to focus entirely on black and Asian participants.

5.4 CONCLUSION

The aims of the research were to explore the relationship between the EDI scores and the clinical interview in order to determine if there was a match between the two and to determine if this is a viable method of analysis for a large-scale validation research venture. The results were as follows: there was 100% match between low EDI scorers and low scorers on the clinical interview, and there was a 64% match between high scorers on the EDI and high scorers on the clinical interview. Although plagued by low expected counts there was a high correlation between the two and Kendal's tau indicated that the relationship was strongly positive. The results thus indicated that there was a strong match between the EDI and clinical interview. Using these two

instruments appears to be a viable design for a large-scale cross-cultural validation study.

REFERENCES

- Allison, D. B. (Ed.). (1995). *Handbook of assessment methods for eating behaviours and weight-related problems*. London: Sage Publications.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*, (4th ed), revised. Washington, DC: American Psychiatric Association.
- Augestad, L. B., & Flanders, W. D. (2003). Assessment of two self-reporting questionnaires for eating disorders in women. *Eating and Weight Disorders*, 8 (3), 12-19.
- Barnhart, C. L., & Barnhart, R. K. (1983). *The world book dictionary*. London: Doubleday & Company.
- Burns, R. B. (2000). *Introduction to research methods*. London: Sage Publications.
- Cash, T. F., & Szymanski, M. L. (1995). The development and validation of the Body-Image Ideals Questionnaire. *Journal of Personality Assessment*, 64 (3), 466-477.
- Census (Census 2001), released in July 2000. Statistics South Africa. Retrieved June 14, 2004. <http://www.info.gov.za/yearbook/2004/landpeople.htm#KZN>.
- De Vos, A. S. (1998). *Research at grass roots*. Pretoria: J. L. van Schaik Publishers.
- Durrheim, K. (1999). *Quantitative analysis*. In M. Terre Blanche & K. Durrheim (Eds.). *Research in practice*. (pp.96-122). Cape Town: University of Cape Town.
- Edwards, D., d'Agrela, A., Geach, M., & Welman, M. (2003). Disturbances of attitudes and behaviours related to eating in black and white females at high school and university in South Africa. *Journal of Psychology in Africa*, 13 (1), 16-33.

- Eichenbaum, L., & Orbach, S. (1992). *Understanding women*. London: Penguin Books.
- Emanuel, E. J., Wendler, D., & Grady C. (2000). What makes clinical research ethical? *Journal of the American Medical Association*, 283, 2701-2711.
- Fairburn, C. G., & Cooper, Z. (1993). The Eating Disorders Examination (12th ed.). In C.G. Fairburn & G.T. Wilson (Eds.). *Binge eating: nature, assessment, and treatment*. (pp. 317-332). New York: Guilford.
- Foxcroft, C., & Roodt, G. (2001). *An introduction to psychological assessment in the South African context*. Oxford: Oxford University.
- Garner, D. M. (1991). *Eating Disorders Inventory- 2. Professional manual*. Odessa, USA: Psychological Assessment Resources.
- Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders*, 2, 15 - 34.
- Garner, D. M., & Olmstead, M. P. (1984). *Manual for Eating Disorders Inventory (EDI)*. USA: Psychological Assessment Resources.
- Geach, M. F. (1995). *A cross-cultural study of eating disordered behaviour in female university residence students*. Grahamstown. Unpublished Masters Thesis, Rhodes University.
- Ghaderi, A., & Scott, B. (2002). The preliminary reliability and validity of the Survey for Eating Disorders (SEDs): A self-report questionnaire for diagnosing eating disorders. *European Eating Disorders Review*, 10, 61-76.
- Gorman, B. S., & Allison, D. B., (1995). *Measures of restrained eating*. In D. B. Allison (Ed.). *Handbook of assessment methods for eating behaviours and weight-related problems*. (pp.149-184). London: Sage Publications.

- Griffin, J., & Berry, E. M. (2003). A modern day holy anorexia? Religious language in advertising and anorexia nervosa in the West. *European Journal of Clinical Nutrition*, 57, 43-51.
- Griswold, W. (1994). *Cultures and societies in a changing world*. Chicago: Pine Forge.
- Hahn, R. A. (1994). Culture bound syndromes unbounded. *Anthropology of Sickness and Healing*. New Haven: Yale University, 40-57.
- Herskovits, M. J. (1958). *Acculturation. The study of cultural contact*. Gloucester, Mass: Peter Smith.
- Hooper, M. S., & Garner, D. M. (1986). Application of the Eating Disorders Inventory to a sample of black, white, and mixed race schoolgirls in Zimbabwe. *International Journal of Eating Disorders*, 5 (1), 161-168.
- Joiner, T. E., & Heatherton, T. F. (1998). First- and second-order factor structure of five subscales of the Eating Disorders Inventory. *International Journal of Eating Disorders*, 23 (9), 189-198.
- Kaplan, H. I., & Sadock, B. J. (Eds.). (1998). *Comprehensive textbook of psychiatry/ VI (6th ed.)*. Baltimore, USA: Williams & Wilkins.
- Kramers, A. L. (2000). *Acculturation and disordered eating: An exploration of disordered eating practises across cultures*. Unpublished master's thesis, University of Natal (Pietermaritzburg), South Africa.
- Leclerc-Madlala, S. (1994, September). *Zulu health, cultural meanings and the reinterpretation of Western pharmaceuticals*. Paper presented at Anthropological Association of Southern Africa conference, University of Natal, South Africa.

- Leclerc-Madlala, S. (2002). On the virgin cleansing myth: gendered bodies, AIDS and ethnomedicine. *African Journal of AIDS Research, 1*, 87-95.
- Lee, S., Lee, A. M., & Leung, T. (1998). Cross-cultural validity of the Eating Disorder Inventory: A study of Chinese patients with Eating Disorders in Hong Kong. *International Journal of Eating Disorders, 23*, 177-188.
- Lee, S., Lee, A. M., Leung, T., & Yu, H. (1997). Psychometric properties of the Eating Disorders Inventory (EDI-1) in a nonclinical Chinese population in Hong Kong. *International Journal of Eating Disorders, 21* (2), 187-194.
- le Grange, D., Telch, C. F., & Agras, W. S. (1997). Eating and general psychopathology in a sample of caucasian and ethnic minority subjects. *International Journal of Eating Disorders, 21*, 285-293.
- le Grange, D., Telch, C. F., & Tibbs, J. (1998). Eating attitudes and behaviors in 1,435 South African Caucasian and non-Caucasian college students. *American Journal of Psychiatry, 155*, 250-254.
- Malson, H. (1998). *The ThinWoman. Feminism, post-structuralism and the social psychology of anorexia nervosa*. London: Routledge.
- Marais, D. L., Wassenaar, D. R., & Kramers, A. L. (2002). Acculturation and eating disorder symptomatology in black men and women. *Eating and Weight Disorders, 8*, 1-11.
- Martin, C. K., Williamson, D. A., & Thaw, J. M. (2000). Criterion validity of the Multiaxial Assessment of Eating Disorders Symptoms. *International Journal of Eating Disorders, 28* (3), 303-310.
- Nasser, M., Katzman, M. A., & Gordon, R. A. (Eds.). (2001). *Eating disorders and cultures in transition*. New York: Brunner-Routledge.

- Nevonen, L., & Broberg, A. G. (2001). Validating the Eating Disorder Inventory-2 (EDI-2) in Sweden. *Eating and Weight Disorders, 6*, 59-67.
- O'Neill, M. (1999). *Adorno, culture and feminism*. London: Sage publications.
- O'Neill, S. K. (2003). African American women and eating disturbances: A meta-analysis. *Journal of Black Psychology, 29* (1), 3 -16.
- Orbach, S., & Eichenbaum, L. (1987). *Bittersweet*. London: Century Hutchinson.
- Partnership for healthy weight management. Body Mass Index (BMI). Retrieved April 3, 2004, from <http://www.consumer.gov/weightloss/bmi.htm>
- Passi, V. A., Bryson, S. W., & Lock, J. (2002). Assessment of eating disorders in adolescents with anorexia nervosa: Self- report questionnaire versus interview. *International Journal of Weight Disorders, 33* (8), 45-54.
- Phelps, L., & Wilczenski, F. (1993). Eating Disorders Inventory-2 Cognitive-behavioral dimensions with non-clinical adolescents. *Journal of Clinical Psychology, 49* (4), 508-515.
- Rieger, E., Touyz, S., Schotte, D., Beumont, P., Russell, J. Clarke, S. (2000). Development of an instrument to assess Readiness to Recover in Anorexia Nervosa. *International Journal of Eating Disorders, 28* (4), 387-396.
- Rossi, J. S., Rossi, S. R., Velicer, W. F., & Prochaska, J. O. (1995). *Motivational readiness to control weight*. In D. B. Allison (Ed.). *Handbook of assessment methods for eating behaviours and weight-related problems*. (pp.387-430). London: Sage Publications.
- Pike, K. M., Loeb, K., & Walsh, B. T., (1995). *Binge eating and purging*. In D. B. Allison (Ed.). *Handbook of assessment methods for eating behaviours and weight-related problems*. (pp.303-346). London: Sage Publications.

- Rizvi, S. L., Peterson, C. B., Crow, S. J., & Agras, W. S. (2000). Test-retest reliability of the Eating Disorders Examination. *International Journal of Eating Disorders*, 28 (3), 311-316.
- Smith, M. J. (2000). *Culture: Reinventing the social sciences*. Philadelphia: Open University.
- Terre Blanche, M., & Durrheim, K. (Eds.). (1999). *Research in practice*. Cape Town: University of Cape Town.
- Tsai, G., & Gray, J. (2000). The Eating Disorders Inventory among Asian American college women. *Journal of Social Psychology*, 40 (4), 527-529.
- Wassenaar D., le Grange D., Winship, J., & Lachenicht, L. (2000). The prevalence of eating disorders pathology in a cross-ethnic population of female students in South Africa. *European Eating Disorders Review*, 8 (3) 225-236.
- Westenhofer, J., Stunkard, A. J., & Pudel, V. (1999). Validation of flexible and rigid control dimensions of dietary restraint. *International Journal of Eating Disorders*, 26, 53-64.
- Wilfley, D. E., Schreiber, G. B., Pike, K. M., Striegel-Moore, R. H., Wright, D. J., & Rodin, J. (1996). Eating disturbance and body image: A comparison of a community sample of adult black and white women. *International Journal of Eating Disorders*, 20 (4), 377-387.
- Williamson, D.A., Anderson, D. A., Jackman, L. P., & Jackson, S. R. (1995). *Assessment of eating disordered thoughts, feelings, and behaviours*. In D. B. Allison (Ed.). *Handbook of assessment methods for eating behaviours and weight-related problems*. (pp.347-386). London: Sage Publications.
- White, M. A., Kohlmaier, J. R., Varnado-Sullivan, P., & Williamson, D.A. (2003). Racial/ethnic differences in weight concerns: Protective and risk factors for the

development of eating disorders and obesity among adolescent females. *Eating and Weight Disorders*, 8 (3), 20-35.

Appendix A
Request to distribute questionnaire

Dear

RE: REQUEST TO DISTRIBUTE QUESTIONNAIRE TO YOUR STUDENTS

I am a Clinical Masters student. I am currently conducting research on aspects of eating disorders amongst students. I would be most grateful for the opportunity to hand out questionnaires towards the end to your lecture for students to complete. This will take approximately 10 minutes of your lecture time.

If there are any other lecturers who may be able to assist please would you kindly pass this message onto them. Your assistance would be much appreciated.

Please find attached a copy of the Eating Disorders Questionnaire. I would like to distribute.

Yours sincerely,

Belinda Mitchell
Clin. Psych. M1 Student
E-mail: belindam@twc.org.za

Research supervisor:

Dr D. R. Wassenaar
Clinical Psychologist
E-mail: wassenaar@nu.ac.za

Appendix B

Introductory patter

Hello everyone, my name is Belinda Mitchell. I am a psychology student doing my masters thesis on Eating Disorders. As I am sure you are aware eating disorders have become an escalating problem amongst young people from all cultures. I am looking for black and white female students who will be prepared to fill in a short questionnaire and possibly be prepared to be involved in a follow-up interview. Please could you raise your hand if you are able and willing to participate.

Appendix C

EDI Questionnaire used in this study

Towards South African validation of the EDI across cultures: A pilot study.

This is confidential. A clinical psychologist and the researcher, Belinda Mitchell will be the only ones who will have access to this data.

Information sheet

Please provide accurate and complete information where possible

o Name:..... Age..... Marital status.....

o Present occupation.....

o Father's occupation..... Mother's occupation.....

o Present weight.....kgs height.....cm

o Highest past weight (excluding pregnancy if relevant).....kgs

How long ago?.....(months)

How long ago did you weigh this weight?.....(months)

o Lowest past adult weight.....kgs

How long ago?.....(months)

How long did you weigh this weight?.....(months)

o What do you consider your ideal weight?.....kg's

Have you ever been unhappy / dissatisfied with your weight, Yes..... No.....

If "yes", did you feel Overweight?

Underweight?

o Age at which weight problems began (if any).....

o **Gender, circle to confirm.** Female

o **Circle the one that applies to you.** (This information is necessary to determine the applicability of the questionnaire).

Race: Black (African) White Indian Coloured

o E-mail address:.....

o Telephone number: home.....cell.....

o **Circle the one that applies to you.**

I am interested in having access to a report on the research project. Yes No

Consent form

The purpose of the study is a pilot cross-cultural validation of the Eating Disorders Inventory (EDI).

EDI questionnaires will be handed out to 200 female students to fill in. These results will be analysed and approximately 40 people will be asked to participate in follow-up interviews. These will be videotaped for further analysis. A clinical psychologist and the researcher, Belinda Mitchell will be the only ones who will have access to the tapes. These will be destroyed after the analysis has been completed. This is to ensure that confidentiality is maintained.

The benefits of participation are:

- 1). Being involved in and become more enlightened about psychological research.
- 2). A summary of the results will be e-mailed to you if you are interested.
- 3). An opportunity to find out about yourself and issues that need to be addressed further. If issues are raised which you would like to explore further, opportunity will be provided for further counselling.

4). You are free to refuse or withdraw from the study at anytime if you wish.

IUnderstand the conditions of the research and agree to participate in an in-depth follow-up interview of approximately one and a half hours if this is required of me. I give permission for my questionnaire and interview to be part of the data analysis and understand that my name will not appear in any reporting in order to keep my identity confidential. Signature..... Name.....

Appendix D

E-mail sent to high and low scorers requesting follow-up

Dear student,

Following your participation in the study on eating disorders I require a follow-up interview with you. Please would you let me know what would be a suitable time for the interview. This is especially important for those of you who will not be back next year at UNP. If this is the case we need to do the interview this year. I have included my contact details so as not to lose contact with you. My e-mail address is belindam@twc.org.za, my telephone number is, 033-3420752 ext 217 and cell number is: 0722457477. Please would you contact me either via e-mail, by telephone or SMS to let me know when are possible times we could meet.

Unfortunately the circumstances of the research did not enable me to get accurate heights and weights from all the participants. As this is the case please would you be so kind as to e-mail me your exact height and weight and include your name.

Thank-you

Kind Regards

Belinda Mitchell