

**PREVALENCE OF EATING DISTURBANCES  
AMONG SOUTH AFRICAN UNIVERSITY STUDENTS:  
A CROSS-CULTURAL COMPARISON**

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#### DECLARATION

This thesis represents my own original work. Where reference has been made to the work of others it has been duly acknowledged in the text.

This thesis has not been presented or submitted in any form to any other university for purpose of a higher degree.

Singnature B. Zeboul.....

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## ABSTRACT

A total sample of 1,105 students from the universities of Natal, Witwatersrand and the North participated in this study. The Eating Attitude Test (EAT) and the Bulimic Investigatory Test, Edinburgh (BITE) were administered to three female and three male student samples. Subjects also provided biographic, demographic and weight-related information.

The majority of subjects fell within the average weight range of the Body Mass Index (BMI), with the percentage of underweight Indian subjects being higher than the corresponding percentages of the black and white student groups. The majority of males in each race group have accurate weight perceptions. In contrast, the minority of females (fewer than a third) of Indian and white females and under half of black females have accurate weight perceptions. However, all overweight white females assessed themselves as such and 89% of overweight black women assessed themselves as overweight. In terms of exaggerated weight perceptions, more white and Indian females (72% and 70% respectively) consider themselves as overweight or very overweight when they were actually of average weight, than black females (47%).

Females in each race group scored consistently higher on all scales assessed than their male counterparts. White females exhibited the most disturbed eating behaviours and attitudes in terms of the categorised percentage scores obtained on all scales of the BITE and EAT. No Indian males obtained scores in the pathological range. On the EAT scale, 19% of white females, 17% of black females and 9% of Indian females, 7% of black males and 1% of white males obtained scores which were categorised as pathological. The more stringent criteria of the BITE showed a lower percentage of all subjects in the pathological range, albeit still retaining the gender discrepancy. Thirteen percent of white female students, 8% of black females, 3% of Indian females, 2% of white males and 1% of black males obtained a pathological score on the BITE scale.

The Indian female and male sample exhibited the healthiest eating behaviours and attitudes relative to the other two racial groups examined.

In terms of mean scores a general trend emerged in which black males obtained higher mean scores than white and Indian males, and black females obtained mean scores (which were overall) similar in magnitude to those of white females.

The majority of black females who obtained pathological scores were urban raised and were from the upper socio-economic stratum. The majority of white females who obtained pathological scores were from urban backgrounds, had exaggerated weight perceptions and expressed a desire to lose at least 10 kilograms of weight.

## CHAPTER 1 : LITERATURE REVIEW

### 1.1 INTRODUCTION

The term eating disorder is used to refer to anorexia nervosa and bulimia nervosa and their variants. (Fairburn & Hay, 1994). The core feature shared by both these disorders is a profound concern about body weight and shape.

The historical antecedents of anorexia nervosa were described independently, but almost simultaneously by Lasegue and Gull as early as 1873. L'anorexie hysterique was broadly defined as food avoidance of nervous origin without ascertainable organic cause or, of sustained abnormally low body weight (Parry-Jones & Parry-Jones, 1994). References to the disorder of bulimia nervosa encompass many variant terms which are traceable in Western European sources over two millennia (Parry-Jones, 1991). However, in recent years it was Russell (1979) who identified bulimia as a variant of anorexia nervosa. Bulimia, a 'new' eating syndrome, found its official acceptance in the scientific arena in DSM III (Diagnostic & Statistical Manual of Mental Disorders, III, 1980, American Psychiatric Association).

The diagnostic criteria for anorexia nervosa according to DSM IV (APA, 1994) are: a persistent refusal to maintain body weight at or above a minimum normal level for age, height and sex; a profound fear of gaining weight or becoming overweight even when drastically underweight; a disturbance of body image - undue influence of body shape or weight is used for self-evaluation, or a denial of emaciation; and in postmenarcheal females, amenorrhea (an absence of at least three consecutive menstrual cycles).

DSM IV (APA, 1994) further specifies two types of anorexia nervosa. In the restricting type, the current episode of anorexia nervosa is characterised by a restriction of caloric intake (dieting/fasting or excessive exercise) but is not regularly accompanied by the binge eating or purging behaviours. In the binge-eating/purging type, the current episode of anorexia nervosa is characterised by regular episodes of binge-eating or purging behaviours such as self-induced vomiting or abuse of diuretics, laxatives, or enemas. Bulimic symptoms may present as a discrete disorder as in bulimia nervosa, or as part of anorexia nervosa (as in the specified binge eating/purging type).

The diagnostic criteria for bulimia nervosa according to DSM IV (APA, 1994) are: recurrent episodes of binge eating (consuming large amounts of food in a discrete time period coupled with a sense of a lack of control); recurrent compensatory behaviours such as self-induced vomiting, laxative and/or diuretic misuse or excessive exercise in order to prevent weight gain; the binge-eating and subsequent compensatory behaviours must both be present at least twice a week for a period of three months; body shape and weight has undue influence on self-evaluation. As in anorexia nervosa, DSM IV (APA, 1994), further specifies two types of bulimia nervosa the purging type and the nonpurging type.

Prevalence of anorexia nervosa in adolescent females and young adult women is estimated to occur in 0,5% - 1,0% (APA, 1994) and occurs 10-20 times more frequently in females than in males (Kaplan, Sadock & Grebb, 1994). Estimates of the incidence of anorexia nervosa range from 0,24 to 14,6 per 100 000 female population per annum (Fairburn & Hay, 1994). The prevalence of bulimia nervosa is higher than that of anorexia nervosa. Estimates of bulimia nervosa among adolescent and young females range from 1% - 3%; the rate of occurrence of this

disorder in males is estimated at one-tenth of that in females (APA, 1994). Estimates of the incidence of bulimia nervosa are not known due to the hidden nature of the illness. However, it appears that over the past 25 years the disorder has become increasingly more common. In all countries in which anorexia nervosa has been reported there has been a substantial growth in the number of cases of bulimia nervosa. Indeed, from historically being conceptualised merely as an unusual variant of anorexia nervosa, bulimia nervosa is presently the most common eating disorder diagnosed; it is five to ten times more common than anorexia nervosa (Gordon, 1990).

Anorexia nervosa and bulimia nervosa are more prevalent in westernised countries in which there is an abundance of food and where thinness for women is considered attractive (refer to Chapter 1, section 1.5). However, some studies have shown that immigrants from non-westernised cultures may assimilate the thin-body ideal and may be at risk for developing eating disorders (Furnham & Alibhai, 1983; Nasser, 1986), (refer to Chapter 1, section 1.7). Eating disorders were initially more prevalent in the upper socio-economic strata, recent studies however, tend to reflect a more even distribution across all strata (Whitaker, Davies, Shaffer, Johnson, Abrahms, Walsh & Kalikow, 1989).

The onset of bulimia nervosa is usually later than anorexia nervosa with the majority of cases presenting in late adolescence and early adult life. The course of bulimia nervosa and anorexia nervosa may be chronic or intermittent with periods of remission. ~~Thirty to fifty percent of anorexic patients have the symptoms of bulimia nervosa.~~ These bulimic symptoms may precede or present after the onset of anorexia (Kaplan, Sadock and Grebb, 1994).

Overall, bulimia nervosa appears to have a more favourable prognosis than anorexia nervosa. The long term outcome of bulimia nervosa is still unknown. Studies have placed the mortality rates of anorexia nervosa to be between 5% and 18% (Yates, 1990).

## **1.2 THE OBSCURE DISTINCTION BETWEEN ANOREXIA NERVOSA AND BULIMIA NERVOSA**

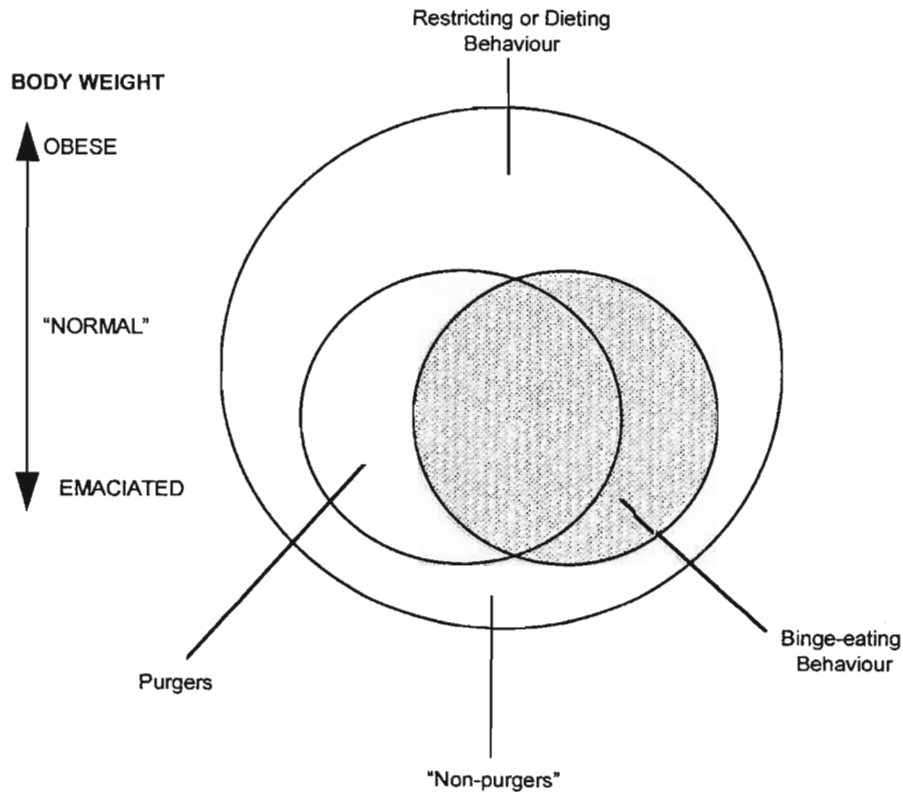
The distinction between anorexia nervosa and bulimia nervosa is unclear and despite diagnostic schema individuals may move from one to the other category. Research indicates that almost half of the patients suffering from anorexia nervosa exhibit bulimic symptoms (Casper, Eckert, Halmi, Goldberg & Davis, 1980; Garfinkel, 1992). Whilst 30% - 80% of bulimic patients have a history of anorexia nervosa (Mitchell, Hatsukami, Eckert & Pyle, 1985; Russel, 1979). Bulimia nervosa has been identified as a significant indicator of the chronicity of anorexia nervosa (Russel, 1979), and alternatively, as the core syndrome of the eating disorders (Katz & Sitnick, 1982). Bulimia nervosa and anorexia nervosa have also been viewed as extremes of the same disorder (Abraham & Beumont, 1982).

Accordingly, some researchers maintain that, except in respect to the presence or absence of emaciation, there is no clear demarcation between anorexia nervosa and bulimia nervosa (Beumont, Garner & Touyz, 1994). Similarly, others warn that the distinction between bulimia and anorexia is a dangerous oversimplification due to the substantial overlap of symptoms (Garner, Garfinkel & O'Shaughnessy, 1985). In considering the specific manifestations of these two eating disorders, there are far more similarities than differences reflected in their psychopathology, behavioural displays and physical effects. Indeed, Beumont et al. (1994) propose that both disorders should be conceptualised as a single 'dysjunctional syndrome' - a



syndrome which reflects many different salient features. However, an excessive pursuit of thinness and self-evaluation which is unduly influenced by body shape and weight and should be the essential features in making the diagnosis. It is within this framework that Beumont et al. (1994) propose that the current diagnostic categories of anorexia nervosa and bulimia nervosa be reflected with a single category termed 'dieting disorder'. This interpretation was implicit in Russell's (1979) description of bulimia nervosa, an ominous variant of anorexia nervosa. Diagram 1 presents a unitary conceptualisation of eating disturbances which proposes the abandonment of entrenched views such as the distinction of anorexia and bulimia nervosa from each other.

**DIAGRAM I : DISTURBED EATING BEHAVIOUR**



**Diagram I.** A Venn diagram illustrating the relationships and overlaps between various forms of eating disturbances. Adapted from Garner, Garner & Rosen (1993).

### 1.3 EATING DISTURBANCES - A CONTINUUM OF BEHAVIOUR

Not only are the boundaries between anorexia nervosa and bulimia nervosa obscure, the boundaries between a formal eating disorder and disturbed eating behaviour are also frequently obscure and ill-defined (Whitehouse & Button, 1988).

Over the past two decades, there has been vigorous debate concerning the necessary and sufficient conditions for the diagnosis of anorexia nervosa and bulimia nervosa. The publication of DSM IV (APA, 1994), has further refined and clarified the diagnostic terms, however, substantial numbers of individuals with significant eating disturbances will still be excluded as they fail to meet the diagnostic criteria of a formal eating disorder. Throughout the literature, researchers report on large numbers of young females who regularly engage in bulimic behaviours, including bingeing, vomiting and fasting in an attempt to control their weight in the absence of a full-blown syndrome (Bunnell, Shenker, Nussbaum, Jacobson & Cooper, 1990; Fairburn & Beglin, 1990; Schotte & Stunkard, 1987). These subjects have been variously classified as having a subthreshold, or a subclinical eating disorder, or a partial syndrome (Fairburn & Beglin, 1990). It is unclear how many individuals who have a subclinical eating disorder will continue to develop anorexia nervosa, or bulimia nervosa, or will recover. Alternatively, bulimic behaviours of bingeing and purging often persist even after the subject no longer fulfils the criteria for bulimia nervosa (Drewnowski, Yee, Kurth & Krahn, 1994). It is in this light, that King (1986), maintains that there is a spectrum of eating disturbances, rather than anorexia nervosa or bulimia nervosa, being an all-or-none phenomenon.

Disordered eating can be conceptualised along a continuum, ranging from unconcern with weight / normal eating behaviour to 'normative discontent' with

weight / moderately disregulated / restrained eating to the formal eating disorders of anorexia and bulimia nervosa. Bulimia nervosa and anorexia nervosa, would thus, represent a pathological extreme of a broader continuum of behaviour directed at weight control (Drewnowski, Yee & Krahn, 1988; Garner, Olmsted & Garfinkel, 1983). 'Normative discontent' can generate intense distress and can be a potential risk factor for the development of a full blown eating disorder (Laessle, Tuschl, Waadt & Pirke, 1989; Polivy & Herman, 1987; Striegel-Moore, Silberstein, Frensch & Rodin, 1989).

It has been proposed that a continuous scale of eating behaviour applied to a nonclinical population (such as university students), will be beneficial in assessing the severity of efforts at weight control and the frequency and severity of disturbed eating symptoms (Drewnowski et al., 1988). This mode of conceptualisation also facilitates the distinction between the clinically significant syndrome of bulimia nervosa or anorexia nervosa from their symptoms or behaviours. (Hart & Ollendick, 1985; Streigel-Moore, Silberstein & Rodin, 1986). Following the logic of the premise of a continuum of risk for eating disorders, a recognition of predisposing personal, familial and socio-cultural vulnerabilities interacting with precipitating stressors will generate a more in-depth understanding of disturbed eating behaviours (Kishchuk, Gagnon, Belisle & Laurendeau, 1992).

#### 1.4 **DISTURBED EATING - A WESTERN SOCIO-CULTURAL CONTEXT**

Noting the marked increase of eating disorders, (specifically bulimia nervosa) over 20 years Bruch (1978) states, "although one might speak of an epidemic illness, there is no contagious agent; the spread must be attributed to the psycho-sociological factor ... I am inclined to relate it to the enormous emphasis that fashion places on slimness" (p8). In the same vein, Garner, Garfinkel, Schwartz

and Thompson (1980), noted a significant increase in the amount of editorial space given to articles concerning weight loss and diet in six prominent women's magazines between 1969-1979 compared to the previous ten years. As prototypes of ideal feminine beauty these researchers also analysed Playboy magazine playmate centrefolds, and contestants and winners of Miss America Pageants from 1959-1978. The mean weight of both samples of female subjects were found to be significantly less than the corresponding population means published by the Society of Actuaries for each year. Moreover, there was a marked decrease in body weight within the two samples. Hence, not only were the females identified as 'ideal body types' consistently thinner than the actual means for comparable women in the population, but these 'ideal' females were becoming thinner and thinner over time. Garner et al., (1980), found that the body weights of the two samples had decreased to as much as 13% - 19% below expected weights. The 'ideal' American female body is almost 'anorexic' when one considers that DSM IV (APA, 1994), criteria for anorexia nervosa is a body weight that is 15% below that expected. Simons (1995) states that it would be erroneous to perceive these findings merely as a reflection of a decrease in average body weights over a twenty year period. A comparison of actuarial norms of 1959 with those of 1979 reveal that the average weight of women below the age of 30 (the age group from which Playboy mates and beauty pageant contestants arise) is consistently heavier in 1979 than in 1959. That is to say, the average weight of the population is increasing parallel with an increasing pressure to be thin.

Throughout history, the aesthetics of a particular era seem to determine the standards of feminine beauty, and evidence points to women attempting to alter themselves in order to meet the current societal demands (Nylander, 1971). In recognising continual technological advances, the media assumes an increasingly

powerful role in the transmission of prevailing societal standards of the ideal physical appearance. Previously, while aesthetic images were romanticised as unattainable, contemporary media obscures the boundaries between reality and the idealised image. Heinberg, Thompson and Stormer (1995) examined women's recognition and acceptance of socially sanctioned standards of appearance and found that the internalisation of societal standards was a significant predictor of body image and eating dysfunction. The influence of television and women's magazines are especially identified as problematic, as female models are portrayed in these media as realistic and accurate representations of actual women, rather than meticulously crafted and manipulated images. It is reported that the social comparisons which ensue, frequently generate body dissatisfaction and the subsequent array of disturbed eating behaviours and attitudes in many women (Garner & Garfinkel, 1980; Heinberg & Thompson, 1992; Heinberg et al., 1995).

Simons (1995) points out that the majority of people in industrial societies acquired the means and the opportunity to become plump relatively recently, over the past hundred years. When they did so, it established a typical pattern of the upper strata choosing to distinguish themselves from their 'inferiors' by adopting an ideal of slimness which would in turn be emulated by the middle class and thereafter the lower class. This concurs with recent research studies which found that anorexia nervosa and bulimia nervosa are spreading more rapidly amongst women from lower social strata rather than in the upper strata where it was once more prevalent (Garfinkel & Garner, 1982; Rand & Kulda, 1992). Other studies demonstrate that societal pressure to remain slim in Western countries increases with socio-economic status (Rand & Kulda, 1990).

In light of the historical move towards a preference for thinness it is not surprising that now more than at any other time, more women are becoming increasingly preoccupied with weight, shape, size and are persistently plagued by food and eating (Wolf, 1990). In a socio-cultural milieu where female beauty and thinness are synonymous, the majority of women report that due to social pressures they constantly attempt to limit their food consumption and strive to be thinner (Crisp, 1967; Huon, 1994; Drewnowski, Kurth & Krahn, 1994). Research indicates that as many as 80% - 90% of westernised females not only calculate their calorie intake on a daily basis but consume less food than is required to satisfy their hunger (Button & Whitehouse, 1981). The increased prevalence of bulimia nervosa is commonly assumed to arise from the socio-cultural context in which the desire for a thin female body is reflected in almost ubiquitous dieting (Huon & Brown, 1984).

An assessment of what constitutes 'normal' eating behaviour in recent times indicates that this behaviour frequently does not meet physiological needs. Polivy and Herman (1987) speak about the 'pathology of normal eating'; what is accepted as socially normal eating behaviour actually exhibits abnormal eating symptoms which are identifiable in eating disorders. It is in this respect that Drewnowski et al. (1994) point out that extremes of bingeing, dieting, fasting, exercising and using laxatives and diuretics are all among the diagnostic criteria for the eating disorders of anorexia nervosa and bulimia nervosa (DSM IV, APA, 1994). Refer to Chapter 1, section 1.5 for a review of prevalence studies conducted on non-clinical samples engaging in disturbed eating behaviours.

Females are generally subject to more social pressure for thinness than males. Fallon and Rozin (1985) reported that college women regard their own body weights to be heavier than the figure they consider most appealing to men, and their ideal

figure to be even thinner, whilst college men report no discrepancies in preference of their own figure, the figure they perceive most appealing to females and their ideal figure. The socialisation process involving food, eating and weight concerns begins in the initial developmental stages. Wolf (1990) reports that American parents urge their sons to eat, regardless of their weight, whilst they encouraged their daughters to eat only if they were extremely thin. Moreover, she reports that this feeding trend can be detected when their offspring are still in their infancy; breast fed female infants are given 50% less time to feed than their male counterparts. Wolf, however does not identify or explain the methodological approach used to obtain such information. Nevertheless, her comments are not surprising in light of the findings obtained by Collins (1991). His study used a structured interview format in which young girls between the ages of 6 - 9 years had to select a figure representing an 'Ideal Self'. It was found that 42% of these children selected a figure significantly thinner than their present weight, with a clear indication that they wanted to lose weight.

Palazolli (1974) points to the contradictory roles and expectations made upon young women in contemporary society and to the ridicule and rejection of fat women. To be overweight is considered to be physically and morally incorrect as it is associated with attributes such as 'gluttonous', 'laziness' and 'incompetence'. (Dejong, 1980; Ritenbaugh, 1982; Schwartz, Thompson & Johnson, 1982; van Strien, 1989). In contrast, to be thin is not only seen as aesthetically beautiful but is associated with highly valued attributes such as power and success. Positive and negative evaluations of body weights are extrapolated to form stereotypical patterns of correlated behaviour and moral attributes, namely self-control and self-indulgence. Indeed, a culture in which weight control is synonymous with self-control and the roles of women are complex and conflicting, most women are subject to some risk

of developing an eating disorder (Schwartz & Thompson, 1981). Viewed in this way, bulimia nervosa and anorexia nervosa may constitute one extreme on a continuum of behaviours and attitudes present in most women (Yates, 1990).

Boskind-Lohdahl (1976) maintains that 'bulimarexia' is not a psychiatric problem but reflects a problem of female socialisation. Lawrence (1984) proposes that although girls may have equal opportunities to boys in education, they are still largely unprepared for the experience of independence and achievement in work, in general boys are socialised into careers while girls are socialised into carers. This theory may be linked to the findings of relatively high rates of eating disorders amongst female university students. The intense academic and social pressures on campuses are reported to increase the vulnerability to developing disturbed eating behaviour (Hart & Ollendick, 1985; Klemchuk, Hutchinson & Frank, 1990; Striegel-Moore et al., 1989), (refer to Chapter 1, section 1.5 for prevalence studies of disturbed eating behaviour amongst female university students). Furthermore, a competitive academic environment may foster both academic achievement and achievement towards a thin 'ideal' body (Garner, Garfinkel, Schwartz & Thompson, 1980; Hsu, 1989). A positive relationship between dieting and the level of education has been established (Silverstein, Perdue, Peterson, Vogel & Fantini, 1986). Beck, Ward-Hull and Mclear (1976) found that women who placed importance upon academic achievement, higher education and professional careers preferred less curvaceous bodies.

Historical explanation of the thinness ideal take cognisance of societal development. Minuchin (1978) identifies the 'irony' of the rising prevalence of eating disorders in an era of female emancipation. It has been postulated that a rise in the prevalence of eating disorders has been inextricably linked with the rise of the



feminist movement (Bruch, 1978; Chernin, 1986). The once acceptable role of motherhood and sense of satisfaction gained from the experience has been the target of feminism. Women are told to assert themselves and actualise their potential outside their home and family. Conflict frequently arises between feminist values in the domestic sphere and the essentially more assertive 'masculine' manner which is necessary to succeed in other spheres. Thus, women are constantly placed in contradictory and ambiguous positions. Gordon (1990) examines the increasing prevalence of women suffering from bulimia nervosa who are in male dominated, competitive and high powered careers. He comments that these women operate under a guise of proficiency and perfection whilst feeling extremely insecure. Opportunities and choices which necessitate independence and assertiveness for vocational accomplishment rise against a backdrop of a traditional feminine value system which emphasises passivity and dependency. Bruch (1978) argues that increased opportunities for women may be experienced as excessive demands and attempts to satisfy these demands and reconcile the conflict between traditional and feminist ideologies make it difficult for women to feel secure in whichever role they decide to adopt. Chernin (1986) identifies this insecurity as contributing to the rise in eating disorders among the western female population.

## **1.5 PREVALENCE OF DISTURBED EATING BEHAVIOURS AND ATTITUDES**

Epidemiological data from 17 studies report a wide disparity in the prevalence of bulimia nervosa ranging from 1% - 20% for females and 0 - 5% for males (Connors & Johnson, 1987). This disparity is due to the varying definitions of symptoms and diagnoses, the diversity of groups studied, and the different methods of data collection. (Ledoux, Choquet & Flement, 1991; Rand & Kulda, 1992). The point is illustrated by Ben-Tovim (1988), who compared the prevalence of the diagnostic

criteria of bulimia (DSM III, 1980) with bulimia nervosa (DSM III R, 1987) and reported that almost 13% of his study fulfilled the criteria for bulimia as opposed to 1,7% who fulfilled the criteria for bulimia nervosa. Prevalence estimates obtained from interviews are substantially lower (ranging from 1% - 3%) than estimates obtained from self-report questionnaires (ranging from 3% - 19%) (Fairburn & Beglin, 1990; Katzman, Wolchik & Braver, 1984).

Nevertheless, whatever measurement devices and criteria used, the single most consistent finding across studies is that eating disorders and symptoms are more prevalent amongst females than males (Carlat & Camargo, 1991; Fairburn & Beglin, 1990). Schneider and Argas (1987) report that unlike females, males set more realistic weight goals and have less body image distortions and as such are less compulsive dieters, use substantially less slimming drugs, laxatives and diuretics than their female counterparts.

In contrast to adolescent males, substantial numbers of females of the same age perceive themselves as overweight irrespective of their actual body weight (Huon, 1994). A survey conducted on 2000 Scandinavian adolescent female students found that despite being of average weight, the majority perceived themselves as overweight and were engaged in dieting in order to lose weight. Furthermore, almost 10% of students were categorised as 'mildly' anorexic (Nylander, 1971). Killen (1986, cited in Killen et al., 1994) reported that 33% of an adolescent female sample perceived themselves to be overweight or very overweight when in fact they were of average weight relative to their height and age. In a similar study, Eisele, Hertsgaard and Light (1986), found that although 81% of adolescent female school pupils were within their range of ideal weight, 78% of them desired to weigh less. Kishuck et al. (1992) studied a broad community sample in Quebec, Canada and

found that 9% of the sample was actually underweight according to the Body Mass Index (BMI), and almost half of them desired to be underweight regardless of their present weight status. More females than males and more younger than older women felt this way. The researchers maintain that these results underscore both the physical and psychological health experienced by these young women. In the same framework, other researchers are led to postulate that concerns of body weight typical of patients with full-blown syndromes are common in attenuated form in non-clinical populations (Bunne et al., 1990; Garfinkel, Goldbloom, Davis, Olmsted, Garner & Halmi, 1992; Geissler, Kelly & Saklofske, 1994).

Halmi, Falk and Schwartz (1981) studied a sample of 355 college students and found that 19% of the female sample and 5% of the male sample reported all the major symptoms of bulimia. Ten percent of this college sample (male and female) engaged in the purging behaviours of laxative use or self-induced vomiting as a means of weight control. However, this study did not include all the operationalised criteria for bulimia and the minimum frequency for binge-eating, vomiting or laxative use was not imposed. Pyle, Neuman, Halvorson and Mitchell (1991), using more stringent diagnostic criteria, reported lower prevalence estimates; 2,2% of female and 0,3% of male college students were suffering from bulimia nervosa. The prevalence of anorexia nervosa in this female student sample was identified at 0,1%. The researchers maintain that fear of loss of control over eating is an important diagnostic criteria for bulimia nervosa, while the fear of being fat is less apt to distinguish between bulimic and nonbulimic women.

Rand and Kuldau (1992), using structured interviews on a random sample of 2,115 adults in the general population, found a prevalence of bulimia in 4% of females aged between 18 - 30 years. No male cases of bulimia nervosa were identified. No

discrepancy was found in the prevalence of bulimia between female students and female non-students. In contrast, Hart and Ollendick (1985) using questionnaires, (the Eating Disorder Inventory (EDI) and the Eating Behaviour Test) found a discrepancy in the prevalence of bulimia nervosa between female students (5%) and working women (1%). However, both studies reported significantly more disturbed eating behaviour among female students than among female same age non-students (Hart & Ollendick, 1985; Rand & Kuldau, 1992) and male students (Rand & Kuldau, 1992). Researchers propose that the university milieu may heighten the conflicts between restrictive weight standards for being attractive and pressures to eat and drink (Drewnowski et al., 1994; Rand & Kuldau, 1992).

This theory was tested in a study conducted on female and male college freshmen in order to ascertain changes in the prevalence and severity of disordered eating symptoms at the beginning and end of the freshman year (Striegel-Moore et al., 1989). A battery of questionnaires, including the EDI and the Perceived Stress Scale, were completed by 590 males and 450 females at baseline, and 546 males and 403 females at follow-up. At baseline, the prevalence of bulimia was 4% for females and 0,2% for males. Although the prevalence of the syndrome did not change, a significant number of students experienced an onset of disturbed eating symptoms which intensified in severity over time. One fourth of the students engaged in dieting for the first time and 15% of female students engaged in binge eating behaviour for the first time. Towards the end of the freshman year, 57% of females and 15% of males were dieting, 33% of females and 7% of males were binge eating and 9% of females and 0,3% of males were purging. Analyses of changes during the year showed that high perceived stress, an increased sense of ineffectiveness and an increase in negative feelings about weight, were associated with a worsening of disordered eating symptoms during the freshman year.

Drewnowski, Yee, Kurth and Krahn, (1994) conducted a subsequent study using a similar methodological approach of administering a questionnaire (the Eating Pathology Scale) at baseline and at a six-month follow-up. This study classified a nonclinical group of female college students according to the reported frequency and severity of bulimic symptoms. While only 3% of their respondents were classified as having bulimia nervosa, over 10% were regularly engaging in bulimic behaviours and were considered at risk for developing an eating disorder. Moreover, this study showed that the new cases of bulimia during the freshman year were drawn from the intensive dieters and the authors strongly suggest that prevention strategies be targeted at the precollege level.

This position is supported by the results obtained from a study conducted by Patton, Johnson-Sabine, Wood, Mann and Wakeling (1990) on 15 year old London schoolgirls. These authors also used a two-stage study, but incorporated a more stringent methodological approach in that screening questionnaires (the EAT and General Health Questionnaire) and structured interviews were used, with a twelve-month interval prior to the re-administration of questionnaires and interviews. The results of the study indicated that the relative risk of dieters (at pre-college level) becoming eating disorder cases were eight times that of non-dieters. Indeed, other research conducted on adolescent school going females report that 25% of the sample were already dieting, 22% were binge eating, 8% engaged in self-induced vomiting and 4% took slimming drugs (Williams, Schaefer, Shisslak, Gronwaldt & Comerchi, 1986). In a similar study using adolescent female school pupils, Crowther, Post and Zaynor (1985) reported that 46% were binge eating, 11% were self-induced vomiting and 5% were taking laxatives. These disturbed eating behaviours which are present at the pre-university level are more likely to be exacerbated than

ameliorated in the university environment (Drewnowski et al., 1994; Rand & Kulda, 1992; Striegel-Moore et al., 1989).

An interesting finding in the literature is that dieting and bingeing co-occur (Huon, 1994; Peterson, 1995; Polivy & Herman, 1985). Ussery and Prentice-Dunn (1992) conducted a study on the eating behaviour of college male students. By means of a battery of questionnaires, including the EDI, the Binge Scale and the Bulimia Test, they identified dietary restraint as the strongest predictor of bulimic attitudes and behaviour, specifically bingeing in their male sample. A similar finding emerged from another questionnaire study conducted on adolescent high school girls in Sydney, where it was reported that an integral relationship between disturbed eating and dieting existed. Those females who wanted to lose 7 or more kilograms were dieting more of the time and were more likely to be categorised as having 'severe' binge eating disturbance than those who were satisfied with their weights and 'never' or 'rarely' dieted (Huon, 1994).

Among adolescent females, binge eating in the category of 'weekly or more frequently' is reported to be between 13% (Huon, 1994), to 21% (Johnson, Lewis, Love, Lewis & Stuckey, 1994). A study of adolescent female students reported that 33,4% regularly overate to the point of feeling uncomfortable and 27% felt unable to control the urge to eat (Ben-Tovim, Subbiah, Schewtz & Morton, 1989, cited in Huon, 1994). It was noted that many of the women surveyed experienced binge eating as a "shameful aberration". Women who experience intense distress associated with bingeing behaviour, frequently discover compensatory purging behaviours and thereby initiate bulimia nervosa. However, it is almost impossible to identify at which point the distress converted into a disorder.

A large study conducted on 2,174 male and 1,804 female university bound high school graduates age 18 years, found that the prevalence of dieting, bingeing and vigorous exercise for weight control increases with socio-economic status (SES) for females, but not for males (Whitaker, Davies, Shaffer, Johnson, Abrahms, Walsh & Kalikow, 1989). However, epidemiological studies have not identified a consistent association between social class and an increased prevalence of eating disorders. The relationship between SES and bulimia nervosa and anorexia nervosa is contradictory. Some researchers identify a preponderance of eating disorders in the upper and middle SES (Anderson & Hay, 1985; Fairburn & Cooper, 1984). Other studies report an even distribution of eating disorders in catchment areas (Dolan, Evans & Lacey, 1989). Certain researchers maintain that there is a levelling in prevalence of eating disorders across all strata due to an increased prevalence of bulimia nervosa among the lower SES (Gross & Rosen, 1988; Rand & Kulda, 1992).

## 1.6 THE INTERFACE BETWEEN CULTURE AND THE PHENOMENOLOGY OF EATING DISORDERS

Culture is an anthropological term which defines a complex set of knowledge, behaviours and customs. Culture and its resultant value systems are variable and arbitrary, and is acquired by means of being or growing up as a member of a social group (Kaplan & Manners, 1972). For the individual, culture is thus inculcated from his/her own experiences in conjunction with the cultural experiences of parents and other significant.

In a cross-cultural discussion, Dolan (1991) urges one to remain aware of the theoretical issue of ethnicity itself when considering the mediating effects and the meaning of the disorder. Lee (1993) maintains that it is wholly insufficient to identify

the aetiology of an eating disorder merely as 'multifactorial' (Garfinkel & Garner, 1982). Few attempts have been made in the literature to explore the interconnections between the prevalence and phenomenology of eating disorders.

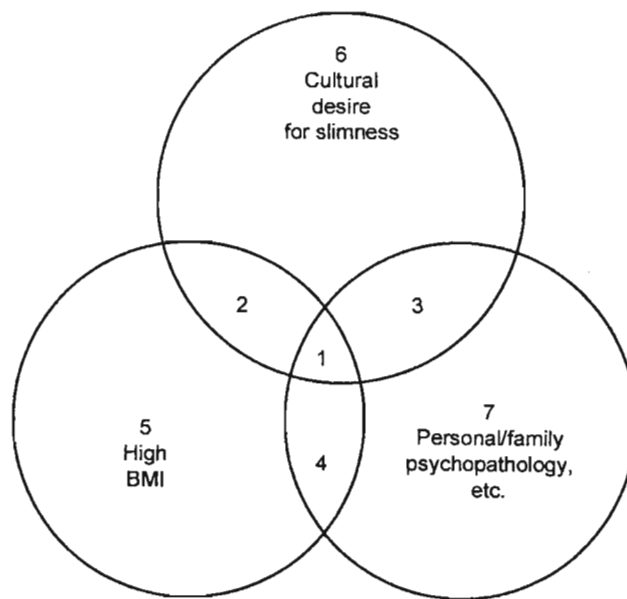
Prince (1983) suggested that anorexia nervosa and bulimia nervosa are culture-bound syndromes related to specific cultural attitudes towards body shape and weight and dieting. In a theoretical exploration of eating disorders as 'culture bound' syndromes, Gordon (1990) makes use of the term 'ethnic disorders' first coined by George Devereux. Eating disorders conceptualised as 'ethnic disorders' acknowledges the interaction between culture and psychopathology. An 'ethnic disorder' includes the following features: the underlying dynamics and symptoms of the disorder are exaggerations and distortions of the attitudes and behaviours of the particular culture (frequently including behaviours that are highly valued); the psychological tensions and conflicts embedded in the culture are expressed in the disorder; and the underlying dynamics and presenting symptoms of the disorder are continuous with the normal elements of the culture, so the disorder may range in intensity from partial/subclinical to full-blown and, as such, people who develop the disorder can range from mildly to severely disturbed (refer to Chapter 1, section 1.3 Eating Disturbances: A Continuum of Behaviour).

Lee, Ho and Hsu (1993) also recognise the paramount importance of the dialectical interaction between biology and culture in eating disorders and posit the model of 'idiom of distress' as a means of mapping the experiences of eating disorders, its sources and consequences in interpersonal spheres. For example, instead of decontextualising the 'fear of fatness' as a theoretical essential attribute of anorexia nervosa and bulimia nervosa, it localises and appraises issues such as weight, status, appearance and food in the 'obesophobic' context of western culture.



Based on theoretical and present empirical evidence, an attempt has been made to indicate the interlinking of etiological factors, prevalence and phenomenology of eating disorders. Diagram II (below) is a conceptual model for understanding how the juxtapositions of the three cardinal pathogenic factors of eating disorders may interact in their genesis, in the avoidance or the pathoplastic moulding (of various forms) of disturbed eating behaviours in different ethnocultural societies. This tripartite paradigm is also heuristically meaningful in that it shows the clinical form, psychological content and increasing incidence of eating disorders in recent times.

**Diagram II : Interaction Between Psycho-Cultural Factors And Eating Disturbances**



**Diagram II.** Interactions of cultural desire for slimness (perceived or actual overweight), high BMI and personal/family psychopathology.  
 (1) Maximum risk of eating disorder especially bulimia.  
 (2) Dieting, sub-clinical binge-eating and partial syndromes.  
 (3) Classical or restrictive anorexia nervosa.  
 (4) Distressed obese.  
 (5) Normal obese (may be valued) as in certain non-western cultures.  
 (6) Cognitive fear of obesity only.  
 (7) Other, personality variables, family variables and psychiatric disorders.  
 Adapted from Lee (1993).

A review of the research strongly indicates that the highest epidemiological risk for developing an eating disorder is in western industrialised society. It is in these

societies that 'The Conflict' emerges: slimness is highly valued at the same time as the incidence of obesity has risen (Rand & Kuldau, 1990). Both these factors have generated a profound dissatisfaction with body weight and shape and have led to the development and implementation of behaviours which target the remoulding of the human body (specifically the female form) (Diagram II, parts 1, 2 and 3). Conversely, eating disorders should least likely occur in traditional communities (rural Africa, India and China) where there is relative absence of both these factors and no such conflict comes into play (Diagram II, part 7). Partly due to the scarcity of food and the culturally endorsed perception of the value of overweight (in some societies) distressed young women in rural non-westernised societies appear not to engage in dieting and eating disorders as a mode of pathology (Lee, 1993). However, as western values gradually permeate the traditional cultural fabric of these societies and the acculturation process is set in motion, minority groups and societies once thought to be 'protected' from eating disorders are now presenting with the pathology.

The situation can be applied to black American women who are caught between two conflicting cultures, the African American culture and the larger dominant white culture. This is also true for black South African women who, too, are subject to conflicting cultural norms. Each culture has a different degree of acceptability in respect to female body weight. Black women can therefore be perceived to be influenced by two very different cultures. It has been proposed that black women who adopt an attitudinal system which incorporates an idealisation of white identity and a relative rejection of their own black identity, are more likely to demonstrate dietary restraint, fear of fat and drive for thinness - factors which already place white females at risk for the development of eating disorders (Abrams, Allen & Gray, 1993).

It is in this vein that DiNocola (1990) proposes the 'culture-change' rather than the 'culture-bound' syndrome in order to account for the emergence of eating disorders in societies which are undergoing rapid socio-economic changes and in women who have migrated to more westernised countries. As western ideals infiltrate developing countries it is not unusual to find observed patterns of abnormal behaviour and their concomitant social responses to increasingly conform to western norms (Lee, Ho & Hsu, 1993). Bruch (1973) maintains that anorexia nervosa may represent an identity struggle. An identity issue is obviously pertinent to young females in developing countries or immigrants - both of whom are experiencing the dissolution of traditional kinship networks and social values (Mumford, Whitehouse & Platts, 1991).

#### **1.7 PATHOLOGICAL EATING BEHAVIOURS AND ATTITUDES - TO WHAT EXTENT ARE THEY CULTURE-BOUND?**

##### **AN EXPLORATION OF THE RESEARCH ON NON-WESTERN POPULATIONS AND MINORITY GROUPS**

Traditionally, it was believed that eating disorders and disturbed eating behaviour were confined to young white middle class females. It was a general held perception that anorexia nervosa and bulimia nervosa were uncommon in the non-western world. The predisposing factor of eating disorders is almost always associated with the importance placed upon slimness in western societies (Nasser, 1986). However, many non-western (Asian and African) countries have growing consumer orientated economies propelled by rapid social and economic changes. The media, specifically advertising, has a salient role in the presentation of western held values. Among the more prosperous classes, there is a widespread adoption of 'western' styles of attitudes and behaviours (Mumford, Whitehouse & Choudry, 1992).

In Malaysia, Buhrich (cited in Mumford et al., 1991) has reported cases of anorexia nervosa in several ethnic groups. In Japan, Suematsu, Ishikawa, Kuboki and Ito (1986), reported 1312 cases of anorexia nervosa, a doubling of the prevalence in a 10 year period. Surprisingly, Lee, Chiu and Chen (1989) found that anorexia nervosa is rare in Hong Kong. This is supported by Chen, Wong, Chan-Ho, Lau and Fung (1993) in a large-scale epidemiological study conducted in Shatin and Hong Kong which reported only one case of anorexia nervosa out of a general population of 7729 male and female subjects and a life-time prevalence of 0,03% in females. However, it is hypothesised that in industrialised cities such as Beijing, Hong Kong and Taipei an increase of females suffering from anorexia nervosa and bulimia nervosa is expected (Lee, 1991; Lee, Hsu & Wing, 1992). In India and China, half or more of anorexia nervosa and bulimia nervosa patients present without fat phobia and body image distortions - a factor which has been regarded in the west as the 'core psychopathology' of eating disorders. Lee (1993) warns that it would be ethnocentric to dismiss these patients as not experiencing genuine eating disorders. He argues that anorexia nervosa may exhibit phenomenological plurality in a westernising country, and its identity may be conceptualised without the construct of a fat phobia. As non-fat phobic anorexics can still not strictly be considered as a western culture-bound syndrome, it may develop into its contemporary fat phobic character under the permeative impact of westernisation (Lee, Ho & Hsu, 1993).

Lee (1993) reports that evidence of this can already be gleaned from the fact that fatness is not approved of to the same extent by Asian women today as it was in the past. In Hong Kong, greeting somebody with 'you have put on weight' was once regarded as a compliment by the older generation, may presently be considered as an offensive remark by the younger generation of females (as it is in the West). This attitudinal change is detected in a study conducted on college medical students

in China where it was found that 78% of female students reported a fear of getting fat. However, only 1,1% met the DSM III R (1987, APA) criteria for bulimia nervosa.

None were binge eating and purging on a regular basis and none met the criteria for anorexia nervosa (Chun et al., 1992).

Single case histories are significant due to the limited early literature available in Africa on eating disorders. The case histories provide an opportunity to describe the content of the disorder in some detail and to understand the meaning of the disturbance for an individual.

A search of the early literature reveals only two reported cases of eating disorders. The first case recorded in a developing country is given by Nwaefuna (1981). He identified a 22 year old Nigerian woman who had a 6 year history of anorexia nervosa. Her social history included parental separation, teenage pregnancy, marriage and separation. She dieted, self-induced vomiting and misused purgatives. On admission she weighed 30 kilograms, was amenorrheic and had lanugo hair. During treatment she developed severe depression and a month after discharge was readmitted for further food refusal.

The second case history was recorded by Buchan and Gregory (1984). The case history of this 22 year old Zimbabwean woman is of particular significance due to the psychosocial factors present. Recurring cultural displacement and parental pressure to perform academically became central themes in her life. At the age of 2 years she lived in England with foster parents, returned to Zimbabwe at the age of 6 years and was taunted at school for not being able to speak Shona and for being overweight. Later, she attended a private, mostly white boarding school where she excelled academically. She was pressurised by her parents to study medicine in

England. At university she became depressed, began to binge eat, vomit and eventually started to lose weight. She was diagnosed to be suffering from anorexia with bulimic symptoms.

A study which administered the EDI to black, white and mixed race adolescent females attending private schools in Zimbabwe reported that the pursuit of thinness was evident in all three racial groups. Pupils of mixed race were identified to have the highest bulimic tendencies. The competitive academic environment in these schools and the sociocultural changes in Zimbabwe were thought to foster a westernised perception of body weight and shape among black pupils (Hooper & Garner, 1986).

In contrast, the findings of Furnham and Baguma (1994) did indicate cultural specific perceptions. These researchers examined the cross-cultural perceptions of male and female body weight. The samples comprised of Ugandan and British university students (each attending university in their country of origin). Findings indicate that major cultural differences emerged with the more extreme figures. The Ugandans rated the obese female figures as more attractive than the British subjects. Hence, the stigma of fatness as ugly is not a universal norm, in some cultures obesity is admired and perceived to be synonymous with fertility, wealth and status (Powers, 1980). Furnham and Baguma (1994) thus hypothesize that for the Ugandan subjects, coming from a relatively poor country where food is scarce, the obese figure represented wealth and health. In contrast, as food has become more readily available in the west, the British subjects rated the obese figures as unhealthy and unattractive.

Several South African studies investigated the relationships between body image, eating behaviours and culture (Grey, 1995; Haynes, 1995; Sherwood, 1994; Winship, 1996).

Using the Body Shape Questionnaire (BSQ), Grey (1995) reported that the percentage of students scoring above the threshold score was highest in white females (29%), followed by black females (24%) and Indian females (20%). A further analysis of his results indicate that black female students were found to have significantly thinner body ideals than white and Indian female students. This finding is supported by Winship (1996), who found that black female students scored significantly higher than white female students on the 'drive for thinness' subscale on the EDI. Sherwood (1994) reported that more black females (20%) than white females (15%) and more black males (8%) than white males (2%) obtained pathological scores on the EAT. She attributes the western socio-cultural emphasis placed upon thinness to be affecting the black students in her sample. Indeed, Haynes (1995) found that increased westernisation was significantly associated with greater body image dissatisfaction. She presented the BSQ to white university students (labeled as highly westernised), black university students (moderately westernised) and black rural women (least westernised). No significant difference in the degree of body image dissatisfaction was found between the highly westernised group and the moderately westernised group. However, significant differences were determined between white female students and rural women, and black female students and rural women.

The research conducted on African American subjects report conflicting findings as some studies report an equal, or only slightly lower prevalence of disturbed eating behaviours than their white American counterparts (Warheit, Langer, Zimmerman &

Biafora, 1993), while other studies report that African Americans have a substantially lower prevalence of eating disorders, disturbed eating behaviour and attitudes than white Americans (Gray, Ford & Kelly, 1987; Rand & Kulda, 1990; Schmolling, 1988).

A study which conducted structured face-to-face interviews (over a one year period) with a community sample of 2075 subjects reported that black females and males had bulimic rates equal to or greater than the white female and male sample, and those subjects from the lower socio-economic group had greater rates of disturbed symptoms than those from the higher socio-economic strata (Warheit et al., 1993). Another study, involving a sample of 938 female and male subjects and using a battery of questionnaires, including the EAT and Rosenberg Self-esteem Scale, found that their minority student sample (African Americans and Hispanics) exhibited only a slightly lower prevalence rate (15%) of disturbed eating behaviour than the white student group (17%) (Fisher, Pastore, Schneider, Pegler & Napolitano, 1994). Singh (1994) conducted a study on the perceptions of desirable body shape and weight amongst young black American men and women. It was found that male and female subjects ranked normal weight figures as more attractive and desirable for long-term relationships than underweight or overweight figures. These findings do not support the belief that college age black subjects find overweight females attractive (Rand & Kulda, 1990; Rucker & Cash, 1992). Moreover, black men and women responded to figures similarly, suggesting that both genders use similar criteria for defining desirable body shape. Singh (1994) further maintains that her findings suggest that black and white American subjects generally use similar standards to judge attractiveness of female figures.



In contrast, it has been reported that black adolescent females wished to gain weight more than white females do and wish to lose weight less often than whites (Rosen & Gross, 1987). These findings seem to concur with the subsequent research conducted by Rucker and Cash (1992) who found that African American college students held less disparaging body image attitudes than white students. Black women evaluated their overall appearance more positively and were less concerned about dieting, eating restraint, fatness and weight fluctuations than white women. As white women rate silhouettes as 'fatter' than black women, it was postulated by Rucker and Cash (1992) that they may have a lower threshold for perceiving 'fatness' than black women. Furthermore, they reported that white females' perception of 'fat' related positively to weight preoccupation and anxiety, striving for thinness and an overinvestment in appearance. There appears to be a greater acceptance and tolerance for a range of normal body weights in black culture than there is in white culture (Abrams, Allen & Gray, 1993). This greater tolerance tends to be associated with different perceptions of aesthetics (Fallon, 1990). It has been proposed that although African American women have been bombarded by white mainstream culture, due to a greater salience of whites in messages of mass media, black females have been able to develop a more positive body image than whites. In addition, black females may be receptive to other influences (opinions of significant others) who have fostered positive body image development (Rucker & Cash, 1992).

Similarly, Abrams et al. (1993) reported that weight loss efforts of black female students were significantly related to weight and were less extreme than those of white students, even though they were heavier overall. In contrast, white females were likely to adopt disordered eating attitudes and behaviours in response (not only to actual) but to perceived weight problems.

Present results do not indicate that African American females idealise 'fatness', only that their attitudes and perception are more moderate - less pursuant of extreme thinness and less 'fat phobic' than those of white females. Their body image ideals are thus more lenient than their white counterparts. These limited findings propose that relative to white American females, African American females develop healthier body images and less eating disturbances. Further research is required to substantiate these findings and to ascertain if any changes in perception and behaviour have occurred.

Research conducted on other minority groups in America showed interesting results. Pumariega (1986) found that Hispanic adolescent females displayed similar levels of disturbed eating behaviour and attitudes to those of white American southern females on the EAT. It should be noted that the value of this study is diminished due to its reliance upon a control group cited in a previous study. Smith and Krejci (1991) conducted a multi-cultural study on Native (Indian) American, Hispanic and white American high school youths. They administered the EDI and Bulimia Test to a total sample of 545 female and male subjects. This study found that Native (Indian) American youths reported a higher degree of disturbed eating behaviour and attitudes than Hispanic or white Americans. The data from this study is limited in that the female and male subjects were not further analysed in race by gender categories. Johnson et al. (1994) found that all symptoms for bulimia nervosa were not disproportionately represented in any racial group. Specifically, binge eating and self-induced vomiting were identified to be relatively common in Hispanic and Native Americans. The results of this study should be treated with caution however, due to its limited sample sizes of Native Americans (n=8) and Hispanics (n=25). A study using the EAT on Asian college women in the United

States reported significantly lower levels of eating pathology than their Caucasian counterparts (Lucero, Hicks, Bramlette, Brassington & Welter, 1992).

Several researchers seem to have detected a trend that as black females and females from other minority groups gain greater socio-economic status and acculturate into western society, they will be more at risk for developing anorexia nervosa and bulimia nervosa (Bulik, 1987; Hsu, 1987). Indeed, Holden and Robinson (1988) reported that the black patients suffering from eating disorders in their study had higher educational levels and social statuses than in the general black population in Britain.

Comparative studies on subjects who have relocated to foreign cultures and their compatriots remaining at home have found an increased rate of eating disorders and disturbed eating symptoms among the former. Nasser (1986) reported that 22% of female Arab students at a London university engaged in disturbed eating behaviour with 6 cases out of 50 fulfilling the diagnostic criteria for bulimia nervosa.

There were no cases of full-blown eating disorders in the matched Cairo sample however, 12% of this sample engaged in disturbed eating behaviour. In keeping with expectation, the subjects from the two samples differed in the degree of westernisation. The recent socio-economic changes in Egypt have meant increasing exposure to western concepts of femininity and attractiveness, hence the relatively high degree of abnormal eating behaviour reported in the Cairo sample.

The even higher percentage of subjects who have disturbed eating behaviour and full-blown eating disorders in the relocated London sample is linked to stress associated with the process of acculturation.

The emotional stress involved in the process of acculturation involves the socio-cultural pressure for weight awareness. Such stress occurs in cases where subjects move from a non-western culture in which there is unconcern about body shape and weight to a western culture in which weight is highly valued. Furnham and Alibhai (1983) reported that although Kenyan Asian women rated fatter figures more favourably than British Caucasian women, Kenyan Asian women who had been living in Britain for 4 years were more extreme in their perceptions as they reacted the most positively to the thinner body images.

Similarly, Mumford, Whitehouse and Platts (1991) using the EAT and BSQ, found a higher increase in prevalence of bulimia nervosa among South Asian schoolgirls living in Bradford, London than among their British counterparts. Further analysis of the Asian sample showed that it was the girls from the more traditional families (as determined by Asian language and dress) who were most at risk for the development of eating disorders. Mumford, Whitehouse and Choudry (1992) repeated the Bradford study in English medium schools in Lahore, Pakistan. Conversely, it was the girls who were the most 'westernised' (as determined by use of the English language at home and the adoption of western diet), who were more at risk for developing eating disorders, than their traditional counterparts.

The researchers propose that although all Asian girls residing in Britain are substantially influenced by the prevailing majority cultural values, the girls who experience the most stress are those who come from the more traditional families whose values are in direct conflict with those of the host culture. The less traditional families have already adopted western values and have started the assimilation process. The traditional girls may be experiencing the greatest internal conflict around developmental issues of identity as they grow up with two sets of opposing

cultural norms. It is proposed by Mumford et al. (1992) that the greater the difference between the two cultures, the greater the resultant internal conflicts and anxieties.

In a study conducted in the United Kingdom, Dolan, Lacey and Evans (1990) reported that women with Asian (Indian subcontinent - Pakistani/Indian) background demonstrated more abnormal eating attitudes than Caucasian or Afro-Caribbean females. An overconcern with body weight and shape was however not limited to the Caucasian group but was found to be present in all three groups. Similarly, Ahmad, Waller and Verduyn (1994) using a battery of questionnaires including the EAT and Parental Bonding Instrument, also demonstrate that Asian girls living in the United Kingdom have more unhealthy eating attitudes than Caucasian girls.

Intergenerational conflict - tensions arising from cultural discrepancies between Asian parents and children is highlighted as a significant contributory factor in the development of eating disorders among Asian girls in Britain and girls adopting western values living in Pakistan (Mumford et al., 1992). The hypothesis of intergenerational conflict is substantiated in studies conducted on adolescents in Kuwait (El-Islam, Abu-Dagga, Malasi & Moussa, 1986). As Kuwait is experiencing rapid social change, it is becoming increasingly exposed to western values. The researchers established an association between an increase of psychiatric symptoms and cultural attitudes between Kuwaiti parents and children. The intergenerational conflict centres around patterns of family relationships, methods of marriage and emancipation of women (El-Islam, 1983, in Mumford, Whitehouse & Platts, 1991). Similar intergenerational conflict has been identified in parasuicide cases amongst Indian youths in South Africa (Wood & Wassenaar, 1989).

Dolan (1991) maintains that diagnosis and referral of eating disorders may be affected by the ethnocentric assumptions of western medical services concerning the likelihood of females from non-western cultures presenting with bulimia nervosa. Hence, due to the presumed uncommon occurrence of eating disorders in ethnic minorities, many cases may go unreported by health care workers.

## CHAPTER 2 : RESEARCH METHODOLOGY AND PROCEDURE

### 2.1 Rationale For The Study

As suggested by the preceding sections, during the last decade there has been an increasing awareness in the area of eating disorders. The literature review has highlighted reasonable epidemiological evidence which indicates that eating disorders may occur on a continuum and are increasing in frequency among white young females in western countries (Drewnowski, Kurth & Krahn, 1994; Garfinkel et al., 1992).

Disordered eating can be placed along a continuum varying from unconcern with weight and normal eating to 'normative discontent' with weight and moderately disturbed eating to a full-blown eating disorder (Polivy & Herman, 1987). 'Normative discontent' does not necessitate categorisation as a psychiatric diagnosis. Nevertheless, it can both generate substantial misery and pose a potential risk factor for the development of the full clinical syndrome of bulimia nervosa. As such, this study was specifically structured to obtain data pertaining to the prevalence of bulimic symptoms and disordered eating, rather than the diagnosis of full blown eating disorders.

The increase of eating disorders amongst young white females in western countries is usually attributed to the culturally endorsed desire for slimness. Notwithstanding voluminous western literature, there have been fewer attempts to investigate eating disorders in non-western populations where differences in attitudes and perceptions about eating and beauty may prevail. It is believed that eating disorders are not as prevalent in non-western societies and among non-caucasians. However, empirical evidence is increasing that fatness is no longer valued by young non-western

females who have been exposed to westernisation. These 'western' aesthetic ideals and their associated behavioural factors may contribute to an increased risk of eating disturbances (Lucero et al., 1992). Asian females (Mumford et al., 1991; Mumford et al., 1992). Chinese females (Chen et al., 1993; Lee, 1993). African-American females (Singh, 1994; Warheit et al., 1993). British Afro-Caribbean and Asian women (Ahmad et al., 1994; Dolan et al., 1990). Although there has been a recent increase in the research conducted on non-western population in this area, more research needs to be conducted in order to substantiate the findings.

This research was conducted in the hope that it would contribute more information on the prevalence of disturbed eating symptoms amongst white, black and Indian students in South Africa. Moreover, as both females and males are included in the study, it is hoped that this study may provide insights into the nature of disturbed eating symptoms in both sexes and across different race groups. In so doing, statistics pertaining to South Africa would be generated and thereby facilitate a move away from making generalisations from studies conducted in other countries. Rather, exercises in comparing statistics of different countries in the area of eating disturbances may be enhanced. Furthermore, as eating disorders have only recently (over the last 2 years) become an area of interest to researchers in this country, comparative work in the support and contradiction of data should prove valuable and informative.

## **2.2 Main Area Of Concern And Aims Of The Study**

This study is fundamentally concerned with the epidemiology of disturbed eating symptoms among the South African university population. It is a cross-cultural study, comparing the responses of black, Indian and white students. Furthermore, it



seeks to investigate differences between female and male students in the area of eating difficulties.

The aims of the study are formally stated as follows:

1. To analyse the actual body weight of subjects and to investigate whether self-perceptions of body weight differ among female and male students of different race groups.
2. To ascertain the prevalence and presentation of disturbed eating symptoms in female and male university students of different race groups.
3. To develop a predictive model of bulimic symptoms based on:
  - i) demographical data
  - ii) perceptions of weight.

### 2.3 The Sample

The study is a multicentered one in that several South African universities were used; the researcher attempted to sample large student bodies of these universities so that the results could be generalised to the student population on a national scale.

Students from the following universities participated in the study: the University of Natal; the University of the Witwatersrand; and the University of the North. The final sample of 1105 students comprised: 444 black subjects; 82 Indian subjects; and 579 white subjects. As coloured subjects comprised only 1% (n=9) of the total sample size, they were omitted from the sample. For further information on the sample, refer to Chapter 3, section 3.1 'Detailed Description Of The Subjects' and Table 3.1.

## **2.4 Administration Of The Questionnaires**

Permission was obtained from the respective heads and lecturers of the psychology departments to conduct the study on the students attending the universities of the Witwatersrand, Natal and the North. Advance notice of the study was given verbally by the specific lecturer to the students. At each university the researcher used the following procedure: she was given time (20-30 minutes) of lecture time during which the aims of the study were explained and queries answered. Subjects were assured of confidentiality in order to maximise participation and the accuracy in responses. The researcher remained in the lecture theatre during the completion of the questionnaires. The average response rate of returned questionnaires was 70%. The total number of returned questionnaires was 1141 of which 27 were spoiled.

## **2.5 Instruments**

The questionnaire comprises three sections: The Demographic Questionnaire, The Eating Attitudes Test (EAT) and The Bulimic Investigatory Test, Edinburgh (BITE).

### **2.5.1 The Demographic Questionnaire**

This questionnaire was devised by the researcher in order to obtain demographic and physical characteristics of each subject (refer to Appendix A). Data obtained from the demographic questionnaire allows for the exploration of the possible influence of factors such as age, sex, race, social class and actual and perceived body weight.

### **2.5.2 Eating Attitudes Test (EAT)**

The EAT is a 40 item self-report measure devised by Garner and Garfinkel, (1979) (refer to Appendix B). It is designed to measure abnormal eating

behaviour and abnormal attitudes to food, body image, shape and weight. The EAT is not only used in the clinical population as an aid in treatment and prognosis, but is used extensively as a screening device to identify subjects in the general population who are at risk for developing an eating disorder (Clarke & Palmer, 1983; Rosen, Silberg & Gross, 1988; Garner & Garfinkel, 1980).

The validity and reliability of the EAT in both clinical and non-clinical samples has been successfully demonstrated (Garner & Garfinkel, 1979; Garner et al., 1982). The EAT has also been used extensively to identify the possible presence of eating disorders and symptoms in non-western populations (Choudry & Mumford, 1992; Dolan et al., 1990; Fisher, Pastore, Schneider, Pegler & Napolitano, 1994; Lee, 1993; Mumford et al., 1992; Nasser, 1986). Lee (1993) conducted a factor analysis on non-western population samples and established that while some items were culturally specific, the overall cross-cultural conceptual validity of the EAT was satisfactory. This is supported by other researchers who have also found strong evidence for the cross-cultural validity of the EAT (Mumford et al., 1992). The EAT is considered to be the most widely used instrument in the epidemiological study of eating disorders (Button & Whitehouse, 1981; Johnson-Sabine et al., 1988).

The result of the EAT is a single composite score derived from the heterogeneous item pool which indicates an overall level of symptoms. However, as such, it does not provide item clusters which may relate to clinical characteristics of interest. Thus, in addition to the total EAT (40), the item clusters or factors of the EAT 40 Factor Structure devised by Garner,

Olmsted, Bohr and Garfinkel (1982), were also used in this study (refer to Appendix C). Factor I is identified as 'Dieting' and is concerned with the avoidance of weight gain on the behavioural and attitudinal levels. Factor II is 'Bulimia and Food Preoccupation' and relates to bingeing and purging behaviours of bulimia nervosa and the cognitive level of food control. Factor III 'Oral-Control' relates to self-discipline around food. The internal consistency reliabilities of these 3 subscales in the present sample using Cronbach's alpha coefficient revealed moderate to good values for the first two subscales (0,82 and 0,71 for the Dieting and Bulimia factors respectively). A low value of (0,47) was obtained for Factor III - Oral Control, the implication being that for the present sample this factor was not unidimensional. Accordingly, this factor was omitted from further analysis.

A total score is computed on the EAT from the responses given to all 40 items. The cut-off point is a score of 30 or more points. Such a score is indicative of pathological eating behaviour. The total score is computed on the following basis: Subjects were required to judge whether items necessitated an 'always', 'often', 'very often', 'sometimes', 'rarely' or 'never' response. Each extreme response in a pathological direction scored a value of 3, while the adjacent alternatives were weighted as 2 points and 1 point respectively, the remaining items received a score of zero. The 'sometimes' category frequently obtained the same score as the 'never' category. As such, the information in the 'sometimes' category is overlooked. The term 'sometimes' is obscure and subjective and responses on disturbed eating behaviour are often conservative. It is the opinion of the researcher that the 'sometimes' response may be important to consider for diagnostic purpose.

Hence, two methods of scoring the EAT have been used in this study. The first scoring method is the one adopted by the original authors. The second method, that of the researcher, is also a Likert-type, the difference being that the 'never', 'rarely' and 'sometimes' responses are always differentiated (a value of 1 for 'never', 2 for 'rarely', 3 for 'sometimes', 4 for 'often', 5 for 'very often' and 6 for 'always'). Scores on select items of the EAT using both Garner's scoring and the researcher's scoring methods highlight the difference in the response rate in the 'sometimes' category.

In addition to calculating a total EAT score advocated by Garner and Garfinkel (1979) the researcher calculated subscale scores according to the item clusters of 'Dieting' and 'Bulimia and Food Preoccupation' devised by Garner et al. (1982).

### **2.5.3 Bulimic Investigatory Test, Edinburgh (BITE)**

The BITE is a 33 item self-report measure, devised by Henderson and Freeman (1987) (refer to Appendix C). It is designed to identify subjects who have bulimic symptoms in both general and clinical populations. The BITE is regarded as a tried and tested measure that is used for a range of different purposes. It is used in epidemiological studies concerned with the prevalence of bingeing and purging behaviours in various populations and it can also be used as a measure of severity of symptoms and response to treatment (Henderson & Freeman, 1987). The validity and reliability of the BITE has been successfully demonstrated in clinical and non-clinical populations (Henderson & Freeman, 1987; Waller, 1992). The BITE has been shown to correlate well with scores on the EAT in clinical groups (Henderson & Freeman, 1987).

The BITE comprises two subscales: the Symptom Subscale which measures the degree of symptoms present and the Severity Subscale, which serves as an index of the bingeing and purging behaviour as defined by its frequency. The BITE includes all items in the DSM III R (APA, 1987), and DSM IV (APA, 1994), definitions of bulimia nervosa.

A total score is computed on the BITE from responses given to all 33 items. The cut-off point is 25 or more points, which is indicative of disturbed eating behaviour with the presence of bingeing and purging behaviours. However, the authors suggest that this method merely renders an extremely rough indication of the presence of disturbed eating; the BITE was not devised to differentiate subjects in an all-or-none fashion. The true value of this instrument resides in its ability to render a large range of possible scores so that subjects engaging in disturbed eating behaviour of various degrees can be detected and the presentation of disturbed eating patterns of different populations be noted.

The two subscales on the BITE questionnaire, the Severity subscale and the Symptom subscale, were scored and analysed. Once again, Cronbach's coefficient alpha was used to estimate the internal consistency of the subscales. The internal consistency for the Symptom subscale was high (0,86) and was moderate for the Severity subscale (0,56). Accordingly, the individual items of Severity subscale in addition to the total subscale was used in order to provide added information on the frequency of bingeing and purging behaviours.

In the case of the Symptom subscale a maximum score of 30 is possible. The responses are in a 'yes' or 'no' format. The resultant total score can be categorised into 4 main groups: high scores of 20 or more indicate a highly disordered eating pattern and the presence of binge eating and likely diagnosis of bulimia nervosa; scores in the 19-15 range identify a subclinical group of binge eaters, either in the initial stages of the disorder, or as recovering bulimics; scores in the 10-15 range identifies an unusual eating pattern; and scores in the 0-9 range indicate a normal eating pattern. (Henderson & Freeman, 1987).

Scores on the Severity subscale are subdivided into 3 groups: 0-4 is considered healthy; 5-9 is considered clinically significant; and 10+ indicates a high degree of severity. The authors note that a high score on this scale alone may identify the presence of psychogenic vomiting or laxative abuse even in the absence of binge eating. (Henderson & Freeman, 1979).

**Note:** High scores on any of the above scales cannot be diagnostic of an eating disorder - a clinical interview needs to be conducted in order to confirm the diagnosis.

## 2.6 Statistical Procedures

Descriptive statistics (means, standard deviations, ranges and percentages) were calculated on the demographic, weight-related and other biographic data.

The BMI of each subject was obtained by dividing his/her weight (in kilograms) by the square of his/her height (in metres) (refer to Appendix E). The BMI was used to categorise subjects as overweight, average or underweight relative to their height.

These categories were cross-tabulated against subjects' perceptions of their weights for each race and sex group.

The internal consistency reliability estimates of the EAT and the BITE subscales were estimated via Kuder-Richardson 20. As the BITE Severity subscale showed only a moderately high reliability, its individual items were analysed in addition to its total score. In the scoring of the EAT the original method (Garner & Garfinkel, 1979) as well as a second method of scoring was used and comparisons drawn.

The frequencies and percentages of subjects who scored in the pathological category (30 or more points) on the total EAT were calculated. Two-way Analyses of Variance (ANOVAS) were computed on the EAT 40 item questionnaire, Factor I Dieting, and Factor II Bulimia and Food Preoccupation and the corresponding means and standard deviations are supplied. These analyses were based on the scoring methods of Garner and the researcher.

Two-way Analyses of Variance (ANOVAS) were computed on the BITE Scale, Symptom subscale and Severity subscale and its individual items. The means and standard deviations were calculated. The frequency and percentages of subjects were calculated with respect to the categorisation of scores on the BITE scale, Symptom subscale and on the Severity subscale and its items.

A post-hoc analysis, the Scheffé Test, was undertaken on the EAT and BITE scales and subscales and on selected items in order to identify significant mean differences between groups.



An analysis of the percentage of subjects in each race and sex group who may be labelled as having disturbed eating symptoms was calculated. This was based on the combined results of the EAT and BITE questionnaires.

An intercorrelation matrix of Pearson Product Moment Correlation Coefficient was completed in order to examine the correlations between the two BITE subscales (i.e. Symptom and Severity) and between the EAT factors (i.e. Dieting and Bulimia) and the relation between the EAT and BITE scales.

A step-wise multiple regression was computed to investigate the predictive relationships between eating pathology and biographical and weight related variables.

## CHAPTER 3 : RESULTS

Results are presented in four sections. Firstly, a detailed description of the subjects of the study is presented. Thereafter, the three aims of the study are addressed. The demographic features presented below are summarised in Table 3.1.

### 3.1 A DETAILED DESCRIPTION OF SUBJECTS

A total of 1105 university students participated in this study. The subjects came from three different universities: 325 (29%) students came from the University of Natal; 439 (40%) students from the University of the Witwatersrand; and 341 (31%) students from the University of the North.

Both female and male students were included in the study. There were 727 female students which comprised approximately two thirds (66%) of the sample and 378 male students which comprised one third (34%) of the sample.

Samples from the following three racial groups were obtained: 444 (40%) black students; 82 (7%) Indian students; 579 (52%) white subjects. The majority of subjects from the University of Natal were white (80%), followed by 14% Indian and 6% black. The majority of subjects from the University of the Witwatersrand were white (74%), followed by 18% Indian and 8% black. All the subjects from the University of the North were black.

Approximately, two thirds of the black and white samples were females (61% and 68% respectively). In the Indian sample, the proportion of females was 72%.

**AGE:** The mean age of the total sample was 20,59 years (SD 3,37). The black student sample had the widest age range 17-41 years (mean age 22,26) and were on average 3 years older than the Indian sample (mean age 19,00) and white sample (mean age 19,56).

**MARITAL STATUS:** In each race group, the majority of students were single. In the case of the Indian and white students, over 90% were single (93% and 95% respectively). Three quarters (76%) of black students were single. Divorced and married students comprised less than 1% of each race group.

**LIVING ARRANGEMENTS:** The majority of black students (78%) lived in university residences. In contrast, most Indian students (82%) lived in family homes. Over half of the white students (54%) lived in family homes, whilst (24%) stayed in university residences.

**SOCIO-ECONOMIC STATUS:** Father's occupation was used as a criterion to establish the social class from which subjects came. As occupations were different from race group to race group, they need to be discussed in terms of specific race group. Fourteen percent of black students came from the upper social strata having fathers who are professionals or academics; 44% came from the middle social strata having fathers who own small businesses or are in managerial positions; 42% came from the lower social strata whose fathers are predominately labourers or are unemployed. Approximately two thirds of white students (66%) came from the upper social stratum. Thirty two percent from the middle social stratum and a few (2%) from the lower. The majority (76%) of the Indian students were from the middle social stratus, and 15% and 9% respectively came from the upper and lower social strata.

**RURAL/URBAN ORIGIN:** Slightly over half (55%) of black subjects were raised in urban areas. Most Indians and whites were raised in urban areas, 95% and 87% respectively.

**TABLE 3.1**  
**DESCRIPTION OF SAMPLE:**  
**BIOGRAPHIC AND DEMOGRAPHIC VARIABLES**

			BLACK	INDIAN	WHITE	TOTAL
Sample Sizes		Female	272 (61%)	59 (72%)	396 (68%)	727 (66%)
		Male	172 (39%)	23 (28%)	183 (32%)	378 (34%)
						1,105
Age	Mean	Female	21,98	18,85	19,31	20,04
		Male	22,70	19,39	20,01	20,70
	SD	Female	4,56	1,22	1,71	2,93
		Male	4,09	2,17	1,84	2,91
	Range	Female	17-41 years	18-22 years	17-30 years	17-41 years
		Male	17-38 years	18-27 years	18-30 years	17-38 years
Marital Status		Single	76%	93%	95%	
Living Arrangement		Residences	78%	15%	24%	
		At Home	13%	82%	54%	
		Partner/spouse	3%	0%	5%	
		Commune	1%	0%	15%	
		Alone	5%	3%	2%	
Socio-Economic Status*		Upper SES	14%	15%	66%	
		Middle SES	44%	76%	32%	
		Lower SES	42%	9%	2%	
Rural/Urban		Urban area	55%	95%	87%	

\*Socio-Economic Status was assessed from data on parental occupation.

The following three sections (3.2, 3.3 and 3.4) address in turn each of the three aims of the study: an analysis of actual and perceived body weight of female and male subjects of different race groups; the prevalence and presentation of eating disturbances in female and male students of different race groups; and the development of a predictive model for eating disturbances.

### 3.2 FINDINGS PERTAINING TO THE FIRST AIM OF THE STUDY: AN ANALYSIS OF ACTUAL AND PERCEIVED BODY WEIGHT ACCORDING TO RACE AND SEX

The information in the cross tabulations of actual and perceived weight by race and sex group, has been analysed in three sections. The Body Mass Index (BMI) has been used as the criterion for categorising subjects as underweight, average or overweight.

In Section A subjects are categorised according to the BMI. In section B information is presented on subjects who perceive themselves accurately i.e. as underweight when they actually are underweight, average when they actually are average and overweight when they actually are overweight. In section C information is presented on subjects for each race and sex group whose perceptions of their weight are unrealistically high, i.e. those who perceive themselves as overweight or very overweight when they actually are underweight or average.

#### 3.2.1 SECTION A: ACTUAL BODY WEIGHT ACCORDING TO THE BODY MASS INDEX (BMI))

In order to determine subjects' weight relative to their height, the BMI gives a range of numbers from 19 to 40. The BMI of each subject was obtained by dividing his/her weight (in kilograms) by the square of height (in metres). The three BMI categories delineated are: actually underweight (19 or less); actually average (20-25); and actually overweight (26 or more), (refer to Table 3.2 and Appendix E).

The majority of all subjects in race by sex groups fall within the average weight range of the BMI. The mean BMI for the total black sample is  $\bar{x}=22,93$  (SD 4,80), total white sample is  $\bar{x}=21,32$  (SD 3,22) and total Indian sample is  $\bar{x}=20,23$  (SD 2,84). The white male sample has the highest proportion of average weight subjects (88%). Compared to the white and black female and male samples, the

Indian sample has the highest proportion of underweight subjects (36% of males and 43% of females).

Ten percent or fewer subjects are actually overweight within each group, with no Indian females in this category.

**TABLE 3.2.**  
**PERCENTAGES OF SUBJECTS IN EACH RACE GROUP ACCORDING TO BMI CATEGORIES AND BMI MEAN AND STANDARD DEVIATION SCORES**

	BMI RANGES	FEMALES			MALES		
		BLACK (n=127)	INDIAN (n=54)	WHITE (n=357)	BLACK (n=115)	INDIAN (n=22)	WHITE (n=171)
Actually Underweight	19 ≤	20%	43%	24%	23%	36%	7%
Actually Average Weight	20-25	73%	57%	72%	68%	59%	88%
Actually Overweight	26 ≥	7%	0%	4%	10%	5%	5%
BMI Means		22,62	19,95	20,90	23,31	20,93	22,20
Standard Deviations		4,97	2,81	3,08	4,60	2,96	3,34

\* Due to missing information in this section, sample sizes are reduced.

In summary, the majority of black, Indian and white subjects are of average weights relative to their heights with the percentage of underweight Indian subjects being higher than the corresponding percentages of black and whites.

3.2.2 SECTION B: (ACCURATE WEIGHT PERCEPTIONS)

Three categories of persons are delineated; perceived underweight when actually underweight; perceived average weight when actually average weight; and perceived overweight when actually overweight (refer to Table 3.3).

The majority of Indian and white males perceive themselves accurately. For example, at least 85% of Indian males who are underweight or average weight, have accurate self-perceptions, whilst 77% of underweight white males perceive themselves as such. Fewer underweight or overweight black males have accurate perceptions of their body weights: only 19% of underweight black males describe themselves as such and 36% of overweight black males perceive themselves as overweight. Nevertheless, the majority of black males of average weight have accurate perceptions of their weight (69%).

The trend for women is very different, with a minority of underweight or average weight women perceiving themselves accurately in all race groups. For example, only 20% of white females who are actually underweight perceive themselves as such, compared to 77% of white males in the same category. However, most overweight women regard themselves as such - 89% of overweight black women and 100% of overweight white women regard themselves as overweight.

Table 3.3 ...

**TABLE 3.3**  
**PERCENTAGES OF SUBJECTS IN EACH RACE GROUP WHO HAVE ACCURATE**  
**WEIGHT PERCEPTIONS**

	FEMALES			MALES		
	BLACK	INDIAN	WHITE	BLACK	INDIAN	WHITE
Actually Underweight Perceive Underweight	8%	35%	20%	19%	88%	77%
Actually Average Weight Perceive Average Weight	49%	30%	27%	69%	85%	52%
Actually Overweight Perceive Overweight	89%	0%	100%	36%	0%	62%
Mean Percentage (Perceive As Actual)	44%	32%	28%	54%	82%	54%

In summary, the majority of males in each race group have accurate perceptions of their body weights. In contrast, fewer than a third of Indian and white females and under half of black females have accurate weight perceptions.

**3.2.3 SECTION C: DISTORTED WEIGHT PERCEPTIONS:**  
**(PERCEIVED OVERWEIGHT OR VERY OVERWEIGHT)**

A lower proportion of males than females in each race group considered themselves heavier than their BMI assessment. For example, 4% of black males compared to 28% of black females who are actually underweight perceive themselves as overweight or very overweight (refer to Table 3.4).

There was no significant difference in the percentage of black and white females (28% and 31% respectively) who are actually underweight and perceive themselves as overweight or very overweight. The percentage of Indian females (8%) in the same category is significantly different from that of the black and white female groups; the t test used to indicate differences between proportions indicate that these differences are significant at the  $P < 0,05$  and  $P < 0,01$  level respectively.



More white and Indian females (72% and 70% respectively), consider themselves as overweight or very overweight when they are actually of average weight according to the BMI, than black females (47%).

When the two categories (actually underweight: 'perceived overweight or very overweight', and 'actually average: perceived overweight') are combined, the person identified is one who perceives his/her weight to be over their actual weight. In this category, the mean percentage of black, Indian and white women who perceive themselves as overweight when they are actually underweight or average, is 38%, 43% and 59% respectively. Fewer than 20% of males have this distorted perception.

**TABLE 3.4**  
**PERCENTAGES OF SUBJECTS IN EACH RACE GROUP WHO HAVE DISTORTED WEIGHT PERCEPTIONS**

	FEMALES			MALES		
	BLACK	INDIAN	WHITE	BLACK	INDIAN	WHITE
Actually Underweight Perceive Overweight/ Very Overweight	28%	8%	31%	4%	13%	8%
Actually Average Weight Perceive Overweight	47%	70%	72%	25%	15%	17%
Mean Percentage (Perceive Overweight What Is Actual)	38%	43%	59%	18%	9%	15%

In summary, approximately 40% of black and Indian females students have unrealistically high perceptions of their weights compared to almost 60% of white females. Fewer than 20% of males in all racial groups have this perception.

3.3 FINDINGS PERTAINING TO THE SECOND AIM OF THE STUDY:  
THE PREVALENCE AND PRESENTATION OF EATING DISTURBANCES IN FEMALE  
AND MALE STUDENTS OF DIFFERENT RACE GROUPS

The statistical results obtained from the EAT and BITE questionnaires are combined to give an overall result of the prevalence of eating disturbances in this student sample. Thereafter, the statistical data of the EAT and the data of the BITE questionnaires, are analysed individually in order to give more detailed results. Where appropriate, Garner's scoring method of the EAT (Garner & Garfinkel, 1980), is given together with the researcher's scoring method so that more information can be obtained and comparisons drawn.

3.3.1 PREVALENCE OF DISTURBED EATING BEHAVIOUR IN THE SAMPLE:  
PATHOLOGICAL SCORES OBTAINED ON BOTH THE EAT AND BITE  
SCALES

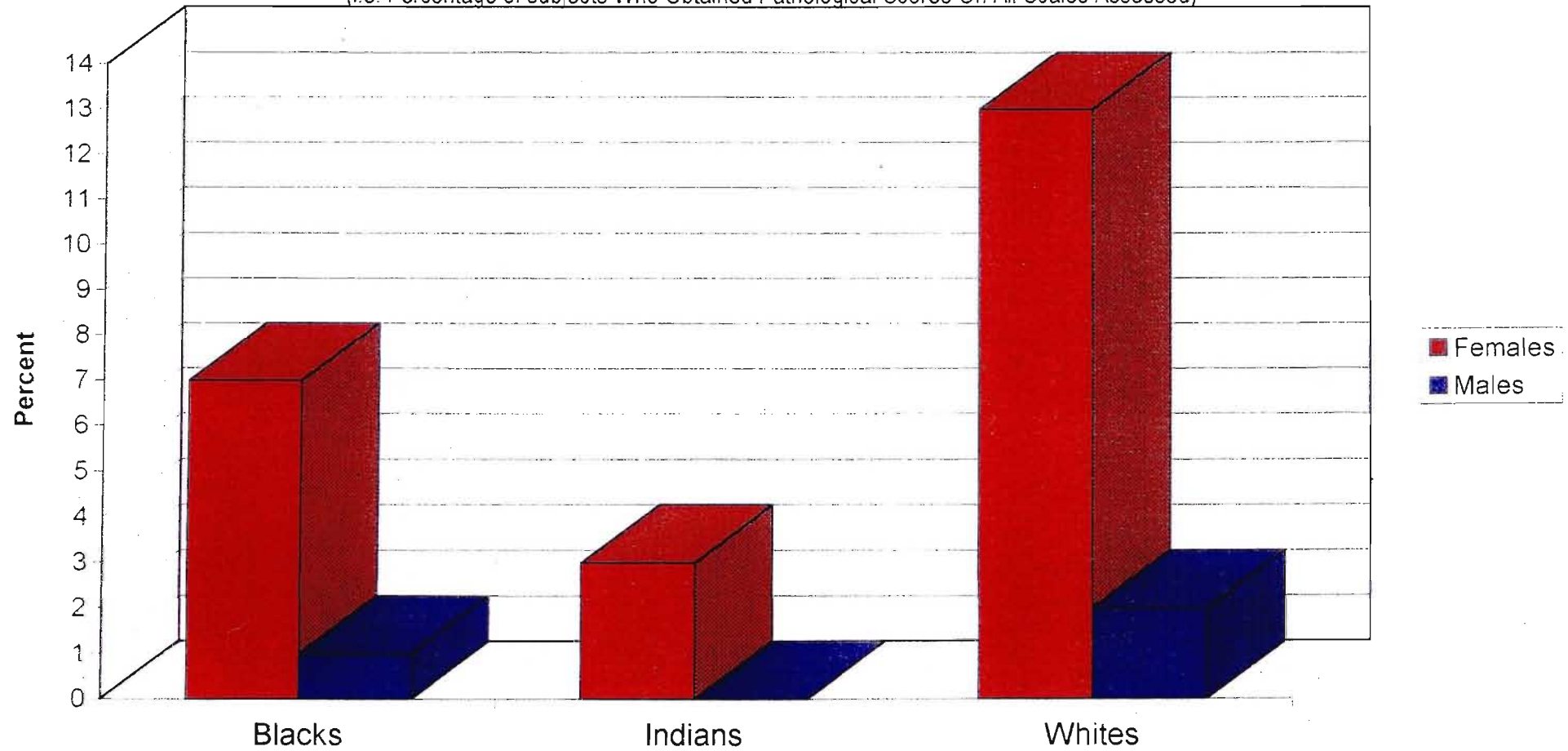
In order to establish the prevalence of pathological eating patterns in the sample the statistical results obtained from the EAT (40) total scale and the BITE (33) total scale are analysed. That is to say, subjects who obtained pathological scores on both instruments - EAT (30 or more points) and BITE (25 or more points) (refer to Table 3.5 and Figure 3.1).

Thirteen percent of white female students obtained pathological scores on both scales, followed by 7% black females and 3% Indian females. Two percent of white males and 1% of black males were identified to be exhibiting pathological eating patterns. No Indian males were identified.

*Table 3.5 ...*

Figure 3.1

Prevalence of Eating Disordered Symptoms in Female and Male Subjects in Each Race Group  
(i.e. Percentage of subjects Who Obtained Pathological Scores On All Scales Assessed)



**TABLE 3.5**  
**PREVALENCE OF EATING DISTURBANCES ACCORDING TO PATHOLOGICAL**  
**SCORES OBTAINED ON THE EAT TOTAL SCALE AND BITE TOTAL SCALE**

	FEMALES	MALES
<b>Black</b>	7% (19) n = 272	1% (2) n = 172
<b>Indian</b>	3% (2) n = 59	0% (-) n = 23
<b>White</b>	13% (51) n = 396	2% (4) n = 183

A further statistical analysis was computed on the EAT (40) scale and the BITE Severity subscale and the BITE Symptom subscale taking into account the alternative scoring method of the BITE in terms of its two distinct subscales, each rendering a composite score (Henderson & Freeman, 1987). That is to say, subjects who scored within the pathological range of all three, or any combination of two scales were identified to be exhibiting pathological eating patterns - EAT (30 or more points), Severity subscale (10 or more points) and Symptom subscale (20 or more points) (refer to Table 3.6).

More white females (11%) than any other group obtained scores within the pathological range. Five percent of black females and 2% of Indian females scored within this range. An equal percent of black and white males (1%) have pathological scores. Once again, no Indian male subjects fell into this category of pathology.

**TABLE 3.6**  
**PREVALENCE OF EATING DISTURBANCES ACCORDING TO PATHOLOGICAL**  
**SCORES OBTAINED ON THE EAT TOTAL SCALE AND/OR SEVERITY SUBSCALE**  
**AND/OR SYMPTOM SUBSCALE**

	FEMALES	MALES
Black	5% (14) n = 272	1% (2) n = 172
Indian	2% (1) n = 59	0% (-) n = 23
White	11% (44) n = 396	1% (2) n = 183

**3.3.1.1 THE CORRELATION BETWEEN THE BITE AND THE EAT SCALES AND SUBSCALES**

In order to examine the correlation between the two BITE subscales (i.e. Symptom and Severity subscales) and the two item clusters of the EAT (i.e. Factor I Dieting and Factor II Bulimia and Food Preoccupations) and the relation between the EAT and BITE scales an intercorrelation matrix of Pearson Product Moment Correlation Coefficient was completed (refer to Table 3.7).

**TABLE 3.7**  
**INTERCORRELATION MATRIX OF THE BITE SUBSCALES AND TOTAL BITE**  
**SCALE, EAT SUBSCALES AND TOTAL EAT SCALE**

	BITE SYMPTOM	BITE SEVERITY	TOTAL BITE	EAT DIETING	EAT BULIMIA	TOTAL EAT
Symptom	-					
Severity	0,64 ***	-				
Total Bite	0,94 ***	0,85 ***	-			
Eat Dieting	0,63 ***	0,51 ***	0,65 ***			
Eat Bulimia	0,65 ***	0,45 ***	0,74 ***	0,58 ***	-	
Total Eat	0,66 ***	0,55 ***	0,73 ***	0,92 ***	0,71 ***	-

\*\*\* (P <0,001)

All subscales considered intercorrelate significantly ( $P < 0,001$ ). The BITE Symptom and BITE Severity subscales correlate 0,64 (i.e. they share 41% common variance). The correlation between the EAT cluster items, Dieting and Bulimia is 0,58 (i.e. they share 34% common variance). The correlation between the EAT scale and BITE subscales are of similar magnitude (0,66 and 0,55 with the Symptom and Severity subscales respectively). The correlation between the total BITE scale and the total EAT scale is 0,73 (i.e. they share 52% common variance).

In summary, more females than males in each race group obtained pathological scores on the EAT and BITE instruments (in all assessed combinations of scales). The prevalence of eating disturbances was highest amongst white women, followed by black women and then by Indian women. Black and white male students reflected a similar prevalence pattern of eating disturbances. The prevalence of eating disturbances (in all assessed combinations of scales) amongst Indian males was zero percent. The intercorrelation matrix of the EAT and BITE scales and subscales reflected significant correlations ( $P < 0,001$ ).

### 3.3.2 RESULTS OBTAINED ON THE EAT QUESTIONNAIRE

The EAT 40 questionnaire is analysed in terms of the total score and scores on the item clusters of Factor I (Dieting) and Factor II (Bulimia and Food Preoccupation).

Gamer's cut-off score of 30 or more points on the EAT (40) questionnaire is indicative of pathological eating behaviour (refer to Table 3.8 and Figure 3.5). The proportion of females who scored in the pathological range exceeded that of males in each race group. White females scored most highly in this range

(19%), followed by black females (17%), Indian females (9%), black males (7%), white males (1%) and no Indian males.

**TABLE 3.8**  
**PERCENTAGES AND NUMBERS OF FEMALE AND MALE SUBJECTS IN EACH RACE GROUP WHO OBTAINED PATHOLOGICAL SCORES ON THE EAT (40) SCALE**

	FEMALES	MALES
Black	17% (46) n = 272	7% (12) n = 172
Indian	9% (5) n = 59	0% (-) n = 23
White	19% (75) n = 396	1% (2) n = 183

**3.3.2.1 THE TWO SCORING METHODS USED**

The researcher sought to identify subjects who endorsed the 'sometimes' category, as they may have potential or latent eating problems, as previously discussed in Chapter 2, section 2.5.2. The conventional scoring method, that of Garner, assigns values only to extreme responses indicative of pathology. Consequently, the researcher scored the items in a simple Likert-type fashion, that is, a value was assigned to each category so that information could be extracted from each item, specifically the 'sometimes' category, which is so subjective in interpretation, was taken into account. An example of the additional information obtained is on item 31, 'feel that food controls my life'. Garner groups together the never/rarely/sometimes categories by assigning a zero score to all these categories; 72% black females and 75% white females are identified in this section. According to the researcher's scoring method, it was found that 22% of black females and 20% of white females sometimes 'feel that food controls their lives', (refer to Table 3.9 for a comparison of scores on select items of the EAT - highlighting the importance of the 'sometimes' category). The Pearson Product Moment Correlation Coefficient between the

**TABLE 3.9**  
**FREQUENCY AND PERCENTAGES OF FEMALE AND MALE SUBJECTS IN EACH RACE GROUP ON SELECT ITEMS OF THE EAT HIGHLIGHTING THE 'SOMETIMES' CATEGORY**

	FEMALES			MALES				FEMALES			MALES		
	Black	India n	White	Black	Indian	White		Black	India n	White	Black	India n	White
	(n=272)	(n=59)	(n=396)	(n=172)	(n=23)	(n=183)		(n=272)	(n=59)	(n=396)	(n=172)	(n=23)	(n=183)
<b>Garner's Scoring Method</b>	<b>(4) Am terrified of being overweight</b>							<b>Researcher's Scoring Method</b>					
Never/Rarely	29	51	55	85	74	89	Never/Rarely	14	31	23	69	61	73
Sometimes							Sometimes	15	20	32	16	13	16
Often	13	17	14	10	17	5	Often/Very Often/ Always						
Very Often	13	7	13	3	0	3		71	49	45	15	26	11
Always	45	25	18	2	9	3							
<b>Garner's Scoring Method</b>	<b>(6) Find myself pre-occupied with food</b>							<b>Researcher's Scoring Method</b>					
Never/Rarely	84	82	69	87	96	90	Never/Rarely	61	53	31	61	79	62
Sometimes							Sometimes	23	29	38	26	17	28
Often	9	10	13	9	4	7	Often/Very Often/ Always						
Very Often	4	5	10	4	0	3		16	18	31	13	4	10
Always	3	3	8	0	0	0							
<b>Garner's Scoring Method</b>	<b>(7) Have gone on binges where I am unable to stop</b>							<b>Researcher's Scoring Method</b>					
Never/Rarely	87	93	86	96	100	97	Never/Rarely	62	71	61	81	96	89
Sometimes							Sometimes	25	22	25	15	4	8
Often	9	3	6	4	0	3	Often/Very Often/ Always						
Very Often	2	2	6	0	0	0		13	7	14	4	0	3
Always	2	2	2	0	0	0							
<b>Garner's Scoring Method</b>	<b>(13) Vomit after I've eaten</b>							<b>Researcher's Scoring Method</b>					
Never/Rarely	99	100	97	99	100	100	Never/Rarely	92	96	89	96	100	97
Sometimes							Sometimes	7	4	8	3	0	3
Often	0	0	2	0	0	0	Often/Very Often/ Always						
Very Often	1	0	1	1	0	0		1	0	3	1	0	0
Always	0	0	0	0	0	0							



TABLE 3.9 (Continued)

	FEMALES			MALES				FEMALES			MALES		
	Black (n=272)	Indian (n=59)	White (n=396)	Black (n=172)	Indian (n=23)	White (n=183)		Black (n=272)	Indian (n=59)	White (n=396)	Black (n=172)	Indian (n=23)	White (n=183)
<b>Garner's Scoring Method</b>	<b>(14) Feel guilty after I've eaten</b>							<b>Researcher's Scoring Method</b>					
Never/Rarely	88	89	75	98	100	97	Never/Rarely	69	77	41	93	100	94
Sometimes							Sometimes	<b>19</b>	<b>12</b>	<b>34</b>	<b>5</b>	<b>0</b>	<b>3</b>
Often	4	5	12	1	0	3	Often/Very Often/ Always						
Very Often	4	3	8	1	0	0		12	11	25	2	0	3
Always	4	3	5	0	0	0							
<b>Garner's Scoring Method</b>	<b>(15) Pre-occupied with a desire to be thinner</b>							<b>Researcher's Scoring Method</b>					
Never/Rarely	55	57	54	80	100	94	Never/Rarely	33	37	29	66	91	85
Sometimes							Sometimes	<b>22</b>	<b>20</b>	<b>25</b>	<b>14</b>	<b>9</b>	<b>9</b>
Often	11	17	16	8	0	3	Often/Very Often/ Always						
Very Often	10	12	13	4	0	2		45	43	46	20	0	6
Always	24	14	17	8	0	1							
<b>Garner's Scoring Method</b>	<b>(28) Take Laxatives</b>							<b>Researcher's Scoring Method</b>					
Never/Rarely	83	96	96	88	96	99	Never/Rarely	45	82	88	46	92	97
Sometimes							Sometimes	<b>38</b>	<b>14</b>	<b>8</b>	<b>42</b>	<b>4</b>	<b>2</b>
Often	10	2	2	8	4	1	Often/Very Often/ Always						
Very Often	4	2	1	3	0	0		17	4	4	12	4	1
Always	3	0	1	1	0	0							
<b>Garner's Scoring Method</b>	<b>(31) Feel that food controls my life</b>							<b>Researcher's Scoring Method</b>					
Never/Rarely	72	86	75	78	87	94	Never/Rarely	50	67	55	66	70	83
Sometimes							Sometimes	<b>22</b>	<b>19</b>	<b>20</b>	<b>12</b>	<b>17</b>	<b>11</b>
Often	10	7	9	8	0	4	Often/Very Often/ Always						
Very Often	7	5	7	9	9	1		28	14	25	22	13	6
Always	11	2	9	5	4	1							

two scoring methods is highly significant ( $R = 0,90$ ;  $P < 0,001$ ). Thus, over 80% of the variance in Garner's EAT scores can be determined by the variance in the researcher's scores.

Two-way Analyses of Variance (ANOVAS), were computed on the total EAT 40 item questionnaire, the Dieting Factor and the Bulimia and Food Preoccupation Factor using the two scoring methods (refer to Table 3.10). The corresponding means and standard deviations are discussed and presented in subsequent tables.

Irrespective of which of the two scoring methods is used, the main effects of race and sex and their interaction effect on the total EAT score and the Dieting Factor score are significant ( $P < 0,01$ ). The interaction effect of race and sex on the total EAT and the Dieting Factor implies that the mean scores of females and males on the total EAT and the Dieting Factor are different for the different race groups.

On the Bulimia and Food Preoccupation Factor the effect of sex is significant ( $P < 0,001$ ) using Garner's scoring method, and the effects of race and sex are significant ( $P < 0,05$  and  $P < 0,001$  respectively) using the scoring method of the researcher. Both scoring methods yield significant interaction effects ( $P < 0,001$ ) on this dimension.

Although the pattern of the results based on the two different scoring methods is generally the same, more highly significant differences are found using the researcher's method than that of Garner.

TABLE 3.10

SUMMARY OF THE RESULTS OF TWO-WAY ANOVAS ON THE EAT (40), DIETING FACTOR, BULIMIA FACTOR AND THE TWO SCORING METHODS INVESTIGATING THE MAIN EFFECTS OF RACE AND SEX AND THEIR INTERACTION.

	Analysis of Variance on the EAT (Garner)						
	MEAN SQUARE				F VALUE		
	Race	Sex	Interaction	Error	Race	Sex	Interaction
EAT	2762,66	4887,34	1212,74	135,12	20,45***	36,17***	8,98***
FACTOR I DIETING	570,91	2310,34	275,14	42,58	13,41***	54,25***	6,46**
FACTOR II BULIMIA AND FOOD PREOCCUPATION	15,51	86,48	75,55	6,77	2,29	12,76***	11,15***
	Analysis of Variance on the EAT (Researcher)						
	MEAN SQUARE				F VALUE		
	Race	Sex	Interaction	Error	Race	Sex	Interaction
EAT	8655,78	39877,05	10606,92	435,15	df=2;1099 19,89***	df=1;1099 91,64***	df=2;1099 24,38***
FACTOR I DIETING	2464,52	15268,57	2709,45	121,68	20,25***	125,48***	22,27***
FACTOR II BULIMIA AND FOOD PREOCCUPATION	106,25	830,84	447,74	24,52	4,33*	33,88***	18,26***

\* P&lt;0,05

\*\* P&lt;0,01

\*\*\* P&lt;0,001

### 3.3.2.2 THE EAT (40) SCALE

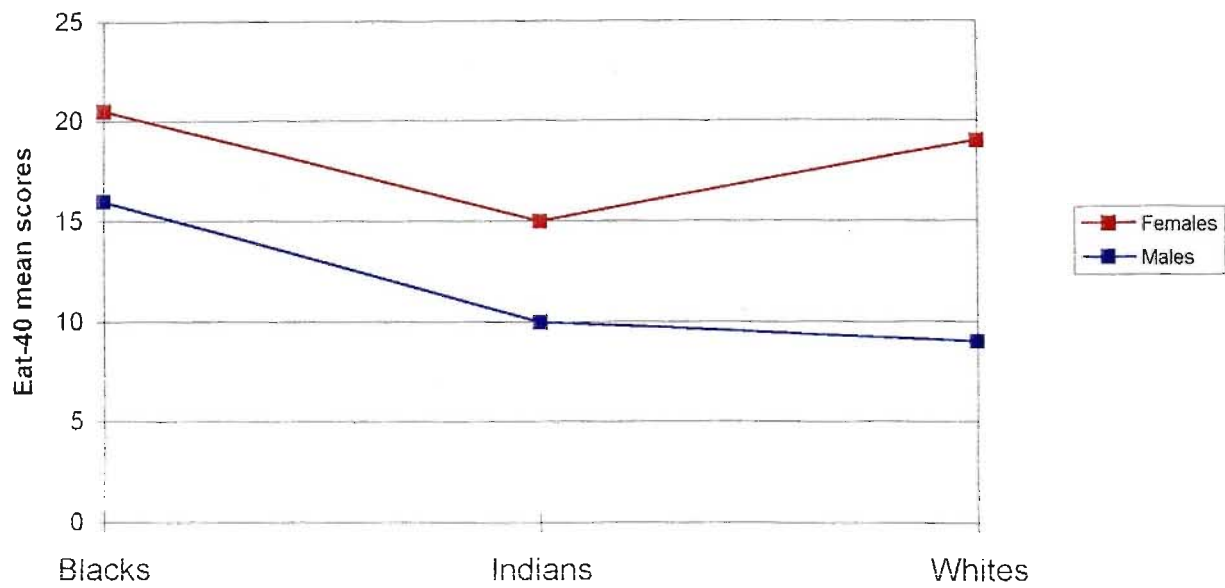
Irrespective of the scoring method used, the Analysis of Variance computed on the EAT scale shows significant main effects of race and sex and their interaction to be significant ( $F=20,45$ ;  $F=36,17$ ;  $F=8,98$ ;  $P < 0,001$  respectively) using Garner's scoring method and ( $F=19,89$ ;  $F=91,64$ ;  $F=24,38$ ;  $P < 0,001$  respectively) using the method of the researcher (refer to Table 3.10).

Based on the means of race by sex groups (refer to Table 3.11), the corresponding interaction plots (refer to Figure 3.2) and the post-hoc analysis by the Scheffé Test (indicating the positions of significant mean scores - refer to Table 3.27); the results of the EAT scale are as follows:

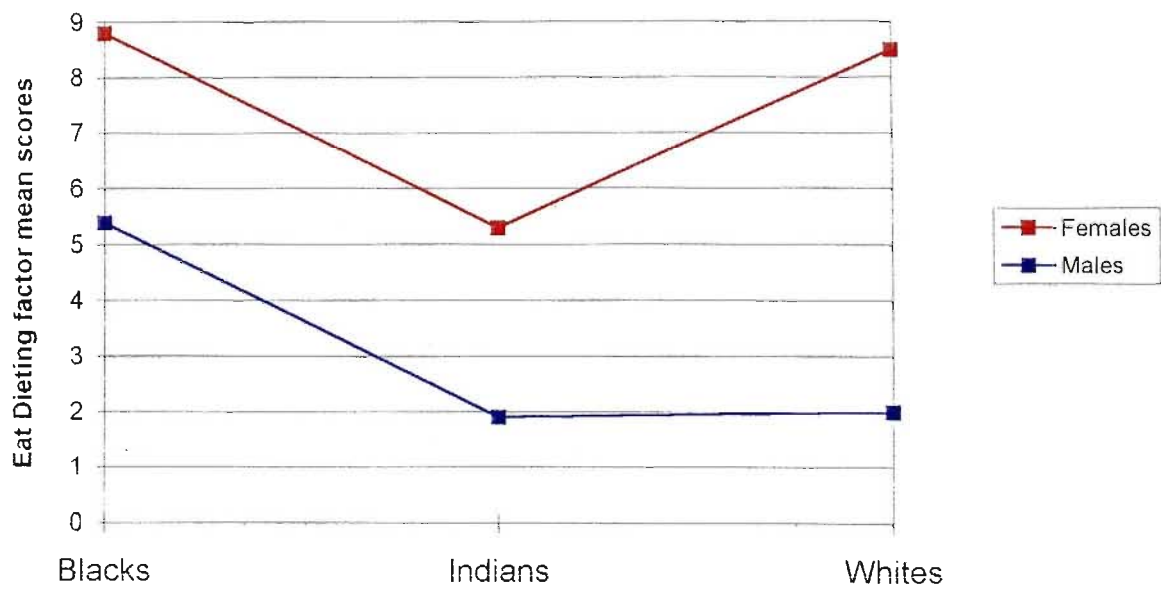
White and black females score significantly higher on the EAT scale than Indian females. There is no significant difference between the mean scores of white and black females. In the case of males, a different pattern emerges giving rise to the significant interaction of race and sex. Males in each race group obtain lower mean scores than their female counterparts. Black males score significantly higher than white and Indian males. There is no significant difference between the mean scores of white and Indian males.

On the EAT scale Garner's scoring method identifies black females as having a slightly higher mean score ( $\bar{x}=20,48$ ) than white females ( $\bar{x}=19,05$ ). It is interesting to note that when the 'sometimes' category is taken into account using the scoring method of the researcher, the mean EAT scores of the two groups are in reverse direction: white females emerge as having a slightly higher mean score ( $\bar{x}=107,20$ ) than black females ( $\bar{x}=104,54$ ). Irrespective of the scoring method used, black males emerge as having the highest mean score

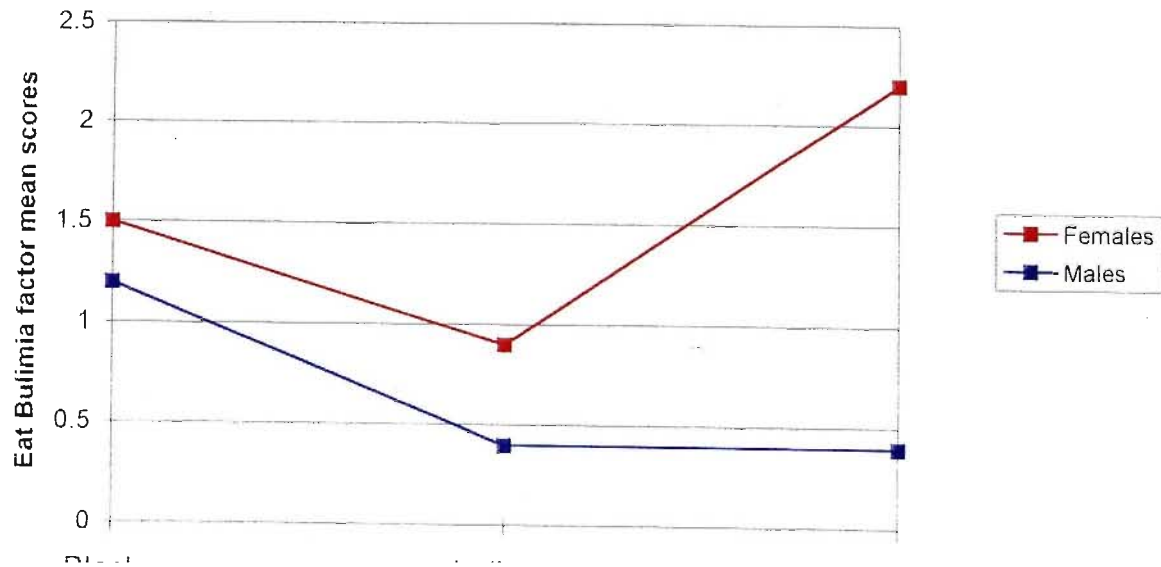
**Figure 3.2**  
Mean Scores of Female and Male Race Groups  
on The Eat-40 Scale



**Figure 3.3**  
Mean Scores of Female and Male Race Groups  
on The Eat Dieting Factor



**Figure 3.4**  
Mean Scores of Female and Male Race Groups  
on The Eat Bulimia Factor



( $\bar{x}=16,38$  /  $\bar{x}=95,19$ ) of all male groups. Garner's method identifies white males as having the lowest mean score ( $\bar{x}=8,58$ ) of all groups, however, when the 'sometimes' category is acknowledged Indian males emerge with the lowest mean score ( $\bar{x}=77,04$ ) on the EAT total scale (refer to Table 3.11).

**TABLE 3.11**  
**COMPARISON OF MEAN AND STANDARD DEVIATION SCORES OBTAINED BY**  
**GARNER AND THE RESEARCHER ON EAT (40) SCALE**

	FEMALES		MALES	
	GARNER	RESEARCHER	GARNER	RESEARCHER
	MEAN SCORES			
<b>Black</b>	20,48 (n=272)	104,54 (n=272)	16,38 (n=172)	95,19 (n=172)
<b>Indian</b>	15,12 (n=59)	94,74 (n=59)	10,17 (n=23)	77,04 (n=23)
<b>White</b>	19,05 (n=396)	107,20 (n=396)	8,58 (n=183)	78,22 (n=183)
	STANDARD DEVIATION SCORES			
<b>Black</b>	10,23	17,25	8,54	16,64
<b>Indian</b>	8,54	20,10	4,27	10,17
<b>White</b>	15,71	26,48	5,55	15,37

### 3.3.2.3 THE DIETING FACTOR

Irrespective of the scoring method used, the Analysis of Variance computed on the Dieting Factor shows significant main effects of race and sex and their interaction to be significant ( $F=13,41$ ;  $F=54,25$ :  $P < 0,001$ ;  $F=6,64$ :  $P < 0,01$  respectively) using Garner's scoring method, and ( $F=20,25$ ;  $F=125,48$ :  $F=22,27$ :  $P < 0,001$  respectively) using the scoring method of the researcher (refer to Table 3.10).

Based on the means of race by sex groups (refer to Table 3.12) the corresponding interaction plots (refer to Figure 3.3) and the post-hoc analysis by

the Scheffé Test (indicating the positions of significant mean scores - refer to Table 3.27); the results of the Dieting Factor are as follows:

White and black females score significantly higher on the Dieting Factor than Indian females. There is no significant difference between the mean scores of white and black female groups. In the case of males, a different pattern emerges giving rise to the interaction of race and sex. Males in all race groups obtain lower mean scores than their female counterparts. Black males score significantly higher than Indian and white males. There is no significant difference between the mean scores of white and Indian males.

On the Dieting Factor, Garner's scoring method identifies black females as having a slightly higher mean score ( $\bar{x}=8,84$ ) than white females ( $\bar{x}=8,55$ ). Once again, the researcher's method yields the converse; white females ( $\bar{x}=40,75$ ) and black females ( $\bar{x}=38,78$ ). This change in pattern must be interpreted in the light of non-significant or chance result. Irrespective of the scoring method used, Indian females have the lowest mean score of ( $\bar{x}=5,32$  /  $\bar{x}=31,42$ ) of all female groups. The pattern of mean scores for males across the race groups was similar for both scoring methods; black males emerge with the highest mean score ( $\bar{x}=5,38$  /  $\bar{x}=31,32$ ) of all male groups and Indian males emerge with the lowest mean score ( $\bar{x}=1,82$  /  $\bar{x}=21,47$ ) on the dieting dimension (refer to Table 3.12).

**Table 3.12 ...**

**TABLE 3.12**  
**COMPARISON OF MEAN AND STANDARD DEVIATION SCORES OBTAINED BY**  
**GARNER AND THE RESEARCHER ON FACTOR I DIETING**

	FEMALES		MALES	
	GARNER	RESEARCHER	GARNER	RESEARCHER
	MEAN SCORES			
Black	8,84 (n=272)	38,78 (n=272)	5,38 (n=172)	31,32 (n=172)
Indian	5,32 (n=59)	31,42 (n=59)	1,82 (n=23)	21,47 (n=23)
White	8,55 (n=396)	40,75 (n=396)	2,09 (n=183)	23,67 (n=183)
	STANDARD DEVIATION SCORES			
Black	6,33	10,38	4,38	8,71
Indian	5,70	12,64	2,12	5,43
White	8,60	13,23	2,76	8,25

**3.3.2.4 THE BULIMIA AND FOOD PREOCCUPATION FACTOR**

The Two-Way Analysis of Variance computed on the Bulimia and Food Preoccupation Factor indicates the effect of race to be significant using the researcher’s scoring method ( $F=4,33$ :  $P <0,05$ ). The main effect for race did not surface in the Two-Way Analysis of Variance using Garner’s scoring method. However, when a One-Way Analysis of Variance was computed on this factor a significant race effect did emerge for Gamer’s method ( $F=3,88$ :  $P <0,05$ ).

Irrespective of the scoring method used the results of the Analysis of Variance computed on the Bulimia and Food Preoccupation Factor indicate the effect of sex to be significant ( $F=12,76$ :  $P <0,001$ ) using Garner’s method, and ( $F=33,88$ :  $P <0,001$ ) using the researcher’s scoring method. Moreover, the interaction effect of race and sex is significant ( $F=11,15$ :  $P <0,001$ ) using Garner’s method, and ( $F=18,26$ :  $P <0,001$ ) using the scoring method of the researcher (refer to Table 3.10).



Based on the means of race by sex groups (refer to Table 3.13), the corresponding interaction plots (refer to Figure 3.4) and the the post-hoc analysis by the Scheffé Test (indicating the positions of significant mean scores - refer to Table 3.27); the results of the Bulimia Factor are as follows:

White females score significantly higher on the Bulimia Factor than do black females and Indian females, the mean scores of the latter two groups do not differ significantly. The pattern of the results for males is once again different, yielding the significant race and sex interaction effect. Males in each race group obtain a lower mean score than their female counterparts. Black males score significantly higher than the Indian and white male groups. There is no significant difference between the mean scores of Indian and white males.

The pattern of mean scores on this dimension is similar for both scoring methods. Irrespective of the scoring method used, white females obtain the highest mean score ( $\bar{x}=2,18$  /  $\bar{x}=14,14$ ) and Indian females obtain the lowest mean score ( $\bar{x}=0,91$  /  $\bar{x}=11,18$ ) on the Bulimia Factor. In the case of males, irrespective of the scoring method used, black males obtain the highest mean score ( $\bar{x}=1,26$  /  $\bar{x}=11,53$ ) and Indian males the lowest mean score ( $\bar{x}=0,34$  /  $\bar{x}=8,91$ ) on this dimension (refer to Table 3.13).

**Table 3.13 ...**

**TABLE 3.13**  
**COMPARISON OF MEAN AND STANDARD DEVIATION SCORES OBTAINED BY**  
**GARNER AND THE RESEARCHER ON FACTOR II BULIMIA AND FOOD**  
**PREOCCUPATION**

	FEMALES		MALES	
	GARNER	RESEARCHER	GARNER	RESEARCHER
	MEAN SCORES			
Black	1,47 (n=272)	12,43 (n=272)	1,26 (n=172)	11,53 (n=172)
Indian	0,91 (n=59)	11,18 (n=59)	0,34 (n=23)	8,91 (n=23)
White	2,18 (n=396)	14,14 (n=396)	0,36 (n=183)	9,22 (n=183)
	STANDARD DEVIATION SCORES			
Black	2,16	4,46	1,79	3,76
Indian	1,82	4,32	0,83	2,27
White	3,61	6,28	1,17	3,39

In summary, on the EAT scale, a higher percentage of females than males in each race group obtained categorised scores over the prescribed limit (of 30 or more points) with more white females than any other group emerging as disturbed (refer to Appendix F). As information in the 'sometimes' category was acknowledged by the researcher, an additional scoring method was introduced which facilitates the identification of persons on the lower end of the pathological scales that is, latent, potential or recovering persons with eating problems. Two-way Analyses of Variance were computed on the EAT scale, Dieting and Bulimic dimensions with black and white females scoring higher than Indian females and all male groups. However, on all three scales the difference between the scores of females and males in the black race group is smaller than that of the Indian race group which in turn is smaller than that of the white group. Hence, the significant interaction effect ( $P < 0,001$ ).

Figure 3.5  
Percentage of Female and Male Subjects in Each Race Group  
Who Scored 30 or More on The Eat-40 Scale

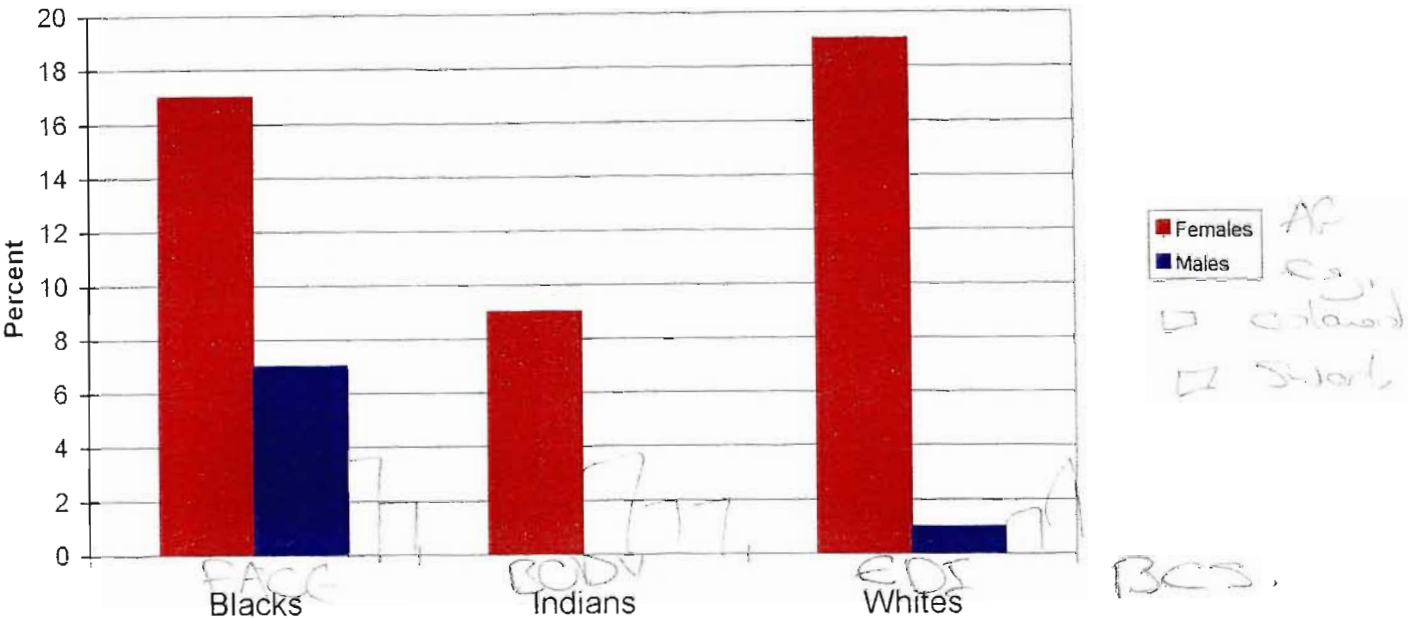
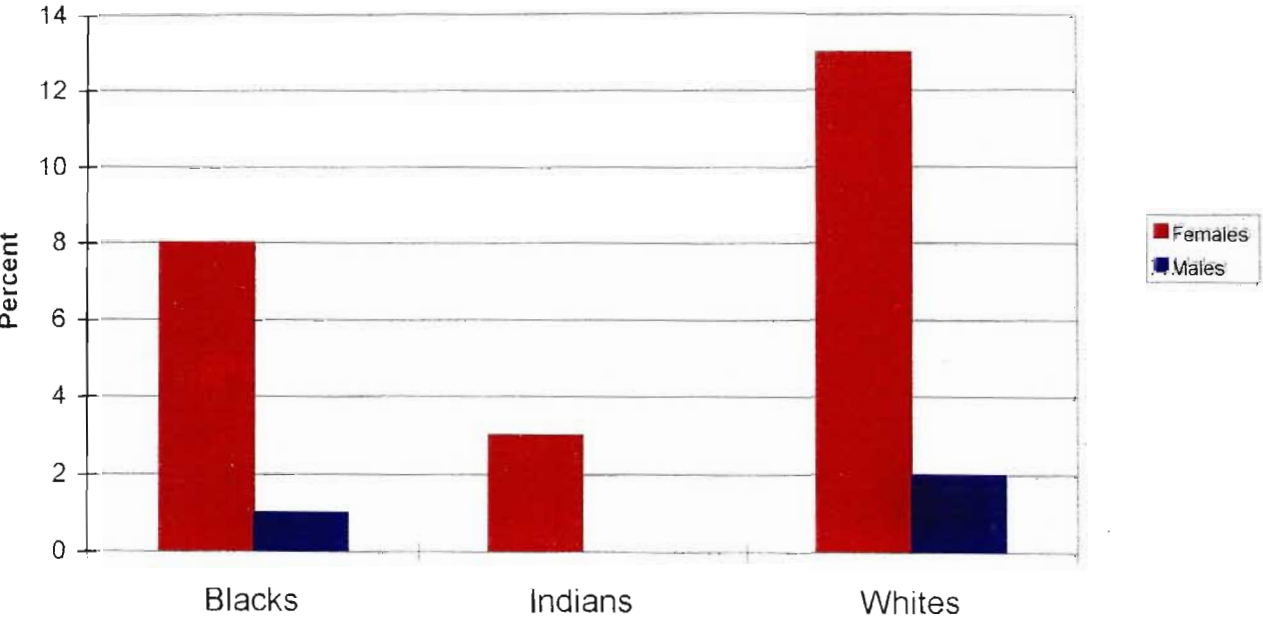
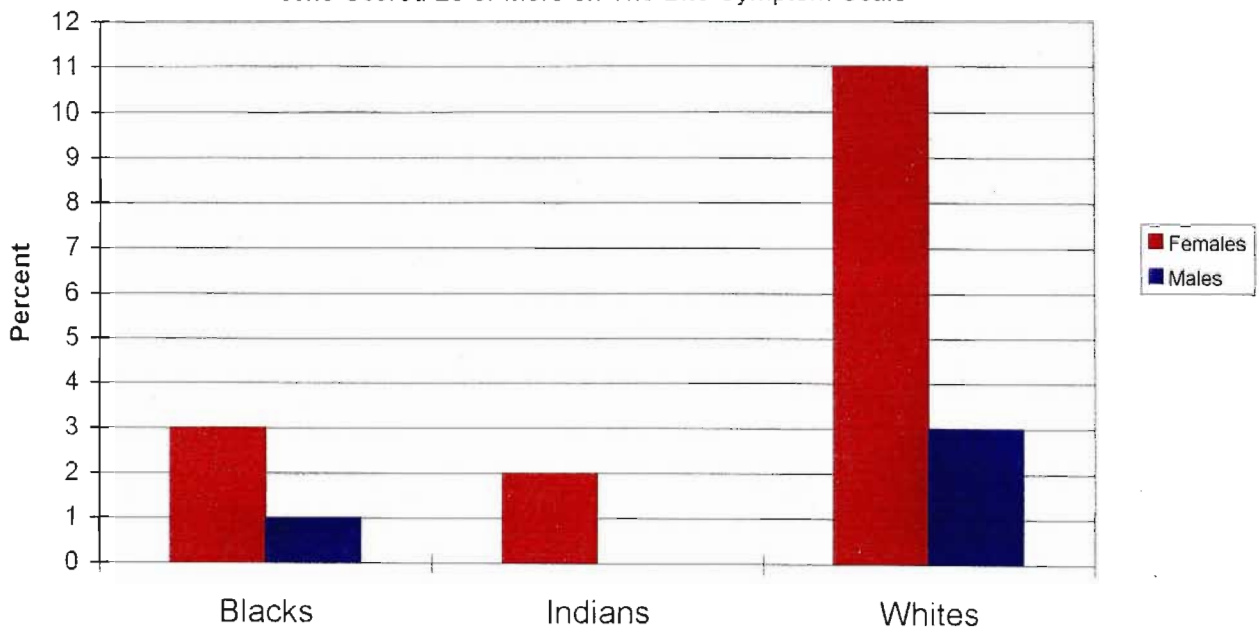


Figure 3.6  
Percentage of Female and Male Subjects in Each Race Group  
Who Scored 25 or More on The Total Bite-33 Scale



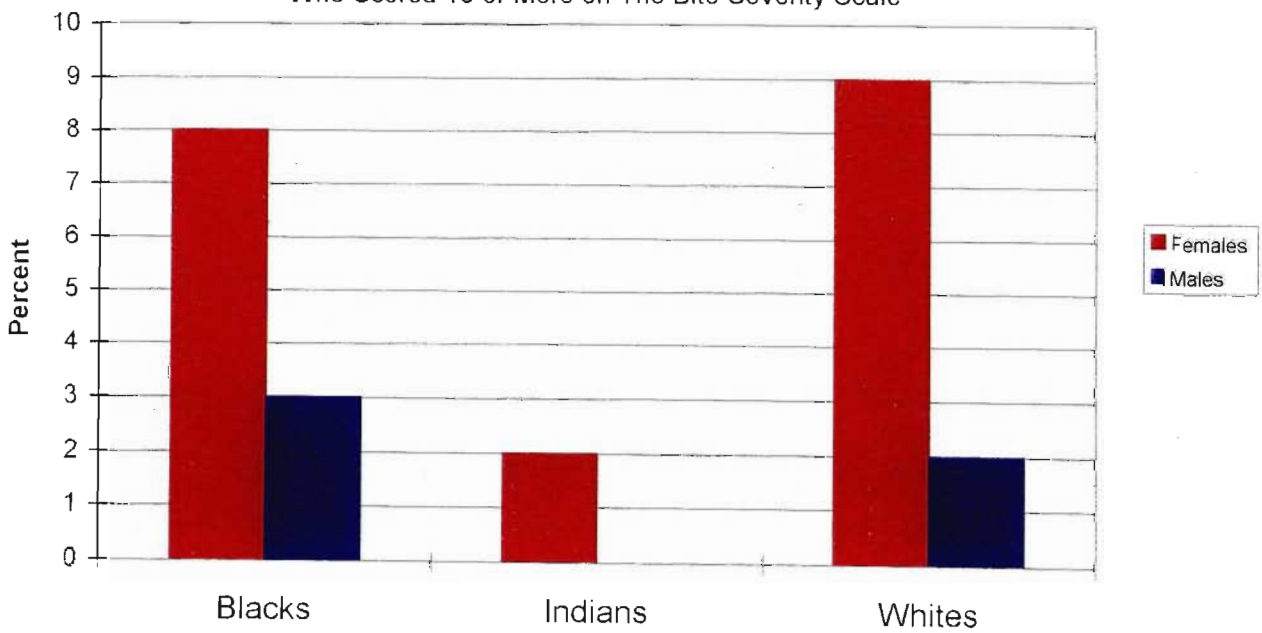
**Figure 3.7**

Percentage of Female and Male Subjects in Each Race Group  
Who Scored 20 or More on The Bite Symptom Scale



**Figure 3.8**

Percentage of Female and Male Subjects in Each Race Group  
Who Scored 10 or More on The Bite Severity Scale



3.3.3 RESULTS OBTAINED ON THE BITE QUESTIONNAIRE

The BITE as a composite total scale is analysed. In addition, in acknowledging the researchers' (Henderson & Freeman 1987) alternative scoring method to obtain more specific information, the Symptom subscale, and Severity subscale are analysed separately. The individual items of the Severity subscale are also analysed owing to the moderate internal consistency reliability of this subscale (as stated in Chapter 2, section 2.5.3). The BITE Symptom subscale, contains attitudinal items whilst the Severity items are behavioural.

3.3.3.1 THE BITE (33) SCALE

A cut-off score of 25 points on the two subscales (Symptom and Severity) combined is considered to be indicative of a pathological eating pattern with bulimic symptoms and/or the presence of binge eating (refer to Table 3.14 and Figure 3.6).

The proportion of females who obtained a pathological score exceeded males in each race group. Thirteen percent of white females obtained scores above the designated point threshold, followed by 8% of black females and 3% of Indian females. Approximately 2% of white males and 1% of black males obtained pathological scores. No Indian males scored above the cut-off criterion.

**Table 3.14 ...**

**TABLE 3.14**  
**PERCENTAGES AND NUMBERS OF FEMALE AND MALE SUBJECTS IN EACH RACE GROUP WHO OBTAINED PATHOLOGICAL SCORES ON THE BITE (33) SCALE**

	FEMALES	MALES
<b>Black</b>	8% (22) n = 272	1% ( 2) n = 172
<b>Indian</b>	3% ( 2) n = 59	0% (-) n = 23
<b>White</b>	13% (51) n = 396	2% ( 4) n = 183

The results of the Analysis of Variance computed on the BITE (total) show significant main effects of race and sex ( $F=17,95$ ;  $F=40,61$ ;  $P < 0,001$ ) and a significant interaction of race and sex ( $F=9,62$ ;  $P < 0,001$ ) (refer to Table 3.15 for the results of Two-way Anovas on the BITE investigating the main effects of race and sex and their interactions).

Based on the means of the race by sex groups (refer to Table 3.16), the corresponding interaction plots (refer to Figure 3,9) and the post-hoc analysis by the Scheffé Test (indicating the positions of significant mean scores - refer to Table 3.27); the results of the BITE scale are as follows:

White and black females score significantly higher on the BITE (total) scale than Indian females. There is no significant difference between the mean scores of white and black females. In the case of males a different pattern emerges giving rise to the significant interaction of race and sex. Males in each race group obtain lower mean scores than their female counterparts. Black males score significantly higher than white and Indian males. There is no significant difference between the mean scores of white and Indian males.

TABLE 3.15

SUMMARY OF THE RESULTS OF TWO-WAY ANOVAS ON THE BITE (33), SYMPTOM AND SEVERITY SCALES INVESTIGATING THE MAIN EFFECTS OF RACE AND SEX AND THEIR INTERACTION

	MEAN SQUARE				F VALUE		
	Race	Sex	Interaction	Error	Race	Sex	Interaction
<b>BITE SYMPTOM SUBSCALE</b>	313,46	1444,92	306,75	30,31	10,34***	47,68***	10,12***
<b>BITE SEVERITY SUBSCALE</b>	265,64	173,88	42,00	10,76	24,69***	16,16***	3,90*
<b>BITE TOTAL SCALE</b>	1010,60	2286,21	541,75	56,30	17,95***	40,61***	9,62***
<b>BITE SEVERITY ITEMS:</b>							
(6) Fast	14,44	7,24	3,17	1,22	11,85***	5,94*	2,60
(7a) Diet Pills	0,76	7,39	1,26	0,74	1,02	9,93**	1,69
(7b) Diuretics	5,77	0,04	0,96	0,42	13,58***	0,09	2,26
(7c) Laxatives	154,63	3,72	3,44	1,12	138,16**	3,32	3,07*
(7d) Vomit	2,29	3,01	1,72	0,66	3,47*	4,56*	2,61
(27) Binge	3,30	18,60	0,60	1,55	2,12	11,97***	0,39

\* P&lt;0,05

\*\* P&lt;0,01

\*\*\* P&lt;0,001

Black females obtained a mean score of  $\bar{x}=13,19$  and were closely followed by white females  $\bar{x}=12,44$ . Indian females obtained the lowest mean score ( $\bar{x}=10,07$ ) of all female groups. Black males emerged with the highest mean score ( $\bar{x}=10,17$ ) of all male groups (refer to Table 3.16).

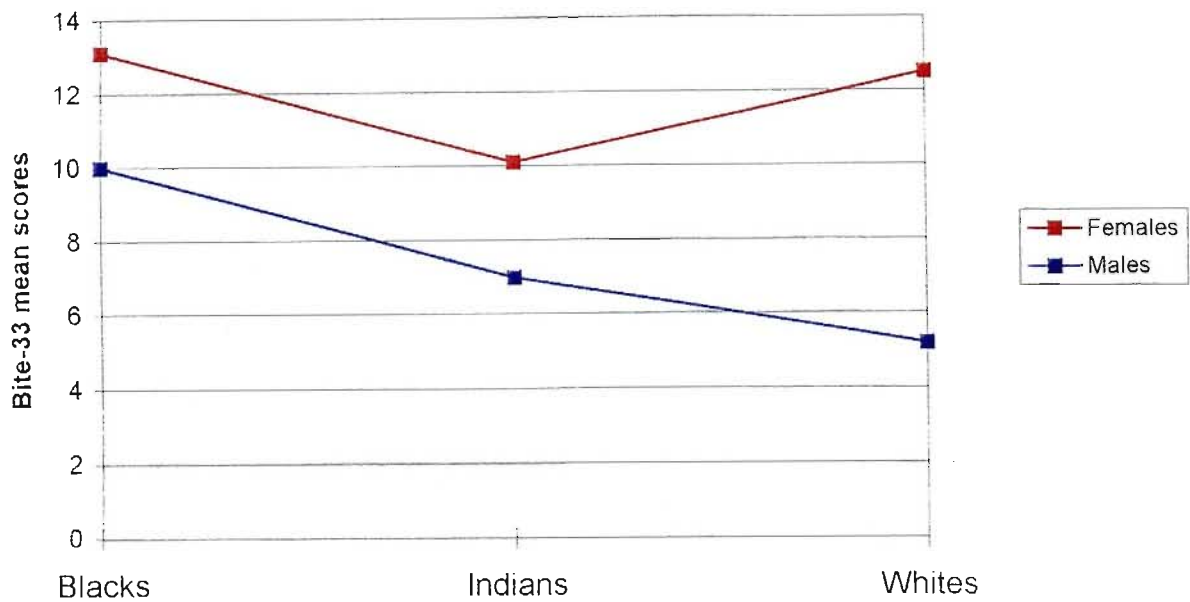
**TABLE 3.16**  
**COMPARISON OF MEAN AND STANDARD DEVIATION SCORES ON BITE (33)**  
**SCALE**

	FEMALES	MALES
	MEAN SCORE	
Black	13,19 (n=272)	10,17 (n=172)
Indian	10,07 (n=59)	6,96 (n=23)
White	12,44 (n=396)	5,22 (n=183)
	STANDARD DEVIATION	
Black	6,72	5,15
Indian	6,37	3,88
White	9,76	5,12

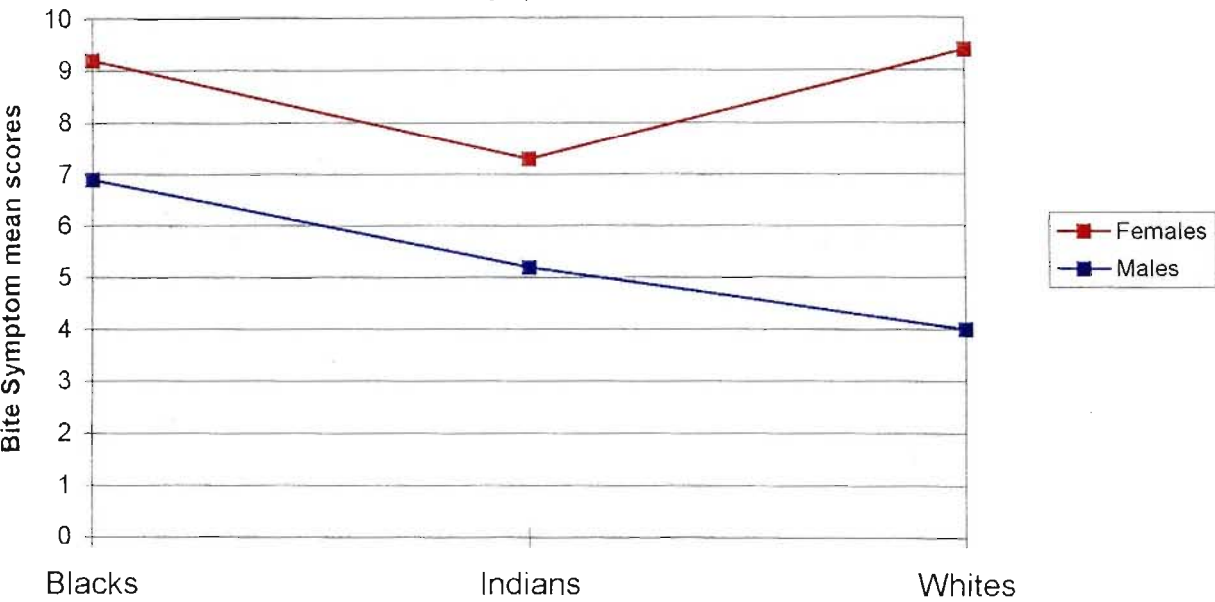
In summary, on the BITE total Scale, a higher percentage of females than males in each race group obtained scores over the prescribed limit (of 25 or more points) with more white females than any other female or male group emerging as disturbed. In terms of mean scores, no significant difference was found between white and black females (refer to Appendix F). Indian females, however, did obtain a significantly lower mean score than the other two female groups. Black males obtained the highest mean score of all male groups. No significant difference was found between the mean scores of the Indian and white male groups.



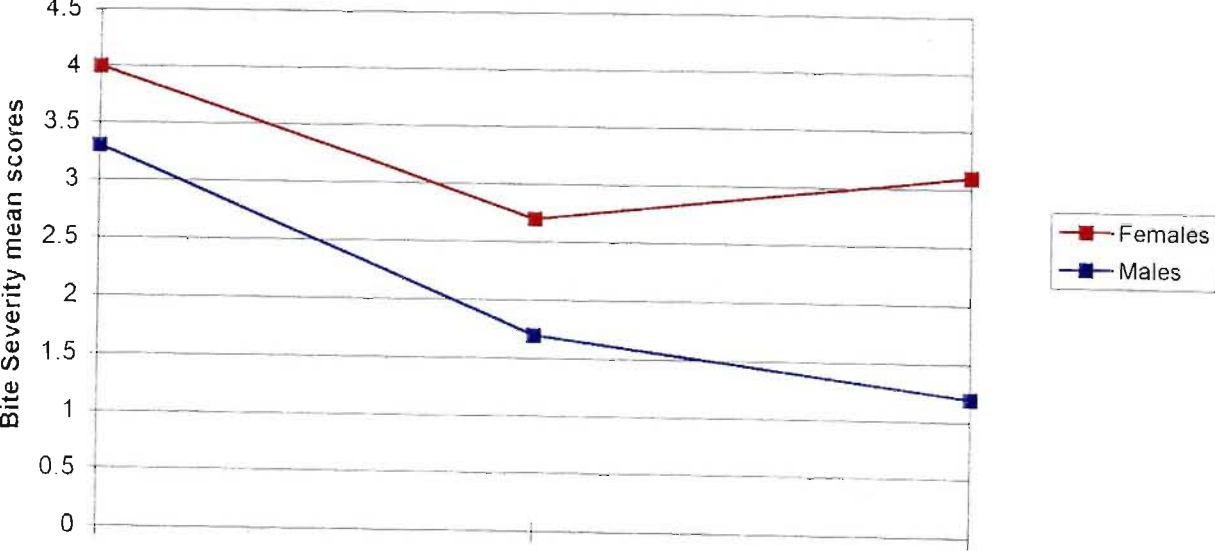
**Figure 3.9**  
Mean Scores of Female and Male Race Groups  
on The Bite-33 Scale



**Figure 3.10**  
Mean Scores of Female and Male Race Groups  
on The Symptom Scale



**Figure 3.11**  
Mean Scores of Female and Male Race Groups  
on The Severity Scale



### 3.3.3.2 THE SYMPTOM SUBSCALE

The Symptom subscale records the degree of symptoms present and the subjects attitude towards eating and food. Henderson and Freeman (1987) divided the scoring of this subscale into 4 categories: normal 0-9; unusual 10-14; subclinical 15-19; and highly disordered 20+ (refer to Table 3.17 and Figure 3.7).

For women, the pattern of scores is as follows: 2% of Indian females, 3% of black females and 11% of white females have attitude scores categorised as severely disordered. A further 16% of white females, 11% black females and 7% of Indian females fall within the subclinical category indicating the possible presence of bulimic symptoms.

Most Indian (96%) and white (93%) males display attitudes towards eating which fall within normal limits (0-9). The percentage of black males in this category is lower at 77%. One percent of black males, 3% of white males and no Indian males are categorised as highly disordered/pathological. The proportion of black and white males who fall within the subclinical eating attitude category is also low; 2% for black males, 2% for white males and no Indian males. Note: The large concentration of black males scoring in the 'unusual eating' category relative to the other two male groups; black males 20%, white males 2% and Indian males 4%.

**TABLE 3.17**  
**PERCENTAGES AND NUMBERS OF FEMALE AND MALE SUBJECTS IN EACH RACE GROUP ACCORDING TO THE CATEGORISATION OF BITE SYMPTOM SCORE RANGE**

	SCORE RANGE	FEMALES			MALES		
		BLACK (n=272)	INDIAN (n=59)	WHITE (n=396)	BLACK (n=172)	INDIAN (n=23)	WHITE (n=183)
Normal Range	0-9	62% (169)	71% (42)	54% (214)	77% (133)	96% (22)	93% (170)
Unusual Eating	10-14	24% (65)	20% (12)	19% (75)	20% (34)	4% (1)	2% (4)
Sub Clinical Bingers/Recovering Bulimics	15-19	11% (30)	7% (4)	16% (63)	2% (3)	0%	2% (4)
Highly Disordered	20+	3% (8)	2% (1)	11% (44)	1% (2)	0%	3% (5)

The results of the analysis of Variance computed on the BITE Symptom subscale show significant main effects of race and sex ( $F=10,34$ ;  $F=47,68$ ;  $P < 0,001$ ) and a significant interaction of race and sex ( $F=10,12$ ;  $P < 0,001$ ) (refer to Table 3.15).

Based on the means of race by sex groups (refer to Table 3.18), the corresponding interaction plots (refer to Figure 3.10), the post-hoc analysis by the Scheffé Test (indicating the positions of significant mean scores - refer to Table 3.27); the results of the Symptom subscale are as follows:

White and black females score significantly higher on the Symptom subscale than Indian females. There is no significant difference between the mean scores of white and black females. In the case of males a different pattern emerges giving rise to the significant interaction of race and sex. Males in each race group obtain lower mean scores than their female counterparts. Once again, black males score significantly higher than white and Indian males. There is no significant difference between the mean scores of white and Indian males.

White females emerged with the most disturbed eating attitude of all female groups with a mean score of  $\bar{x}=9,36$ . In contrast, Indian females emerged the healthiest attitude of all female groups with a mean score of  $\bar{x}=7,36$ . Black males emerged as the most disturbed of all male groups with a mean score of  $\bar{x}=6,95$ , white males emerged as having the healthiest eating attitude of all male groups with a mean score of  $\bar{x}=4,09$  (refer to Table 3.18).

**Table 3.18 ...**

**TABLE 3.18**  
**COMPARISON OF MEAN AND STANDARD DEVIATION SCORES ON BITE**  
**SYMPTOM SUBSCALE**

	FEMALES	MALES
	MEAN SCORE	
Black	9,21 (n=272)	6,95 (n=172)
Indian	7,36 (n=59)	5,22 (n=23)
White	9,36 (n=396)	4,09 (n=183)
	STANDARD DEVIATION	
Black	4,51	3,43
Indian	4,38	2,50
White	6,49	3,62

In summary, both the categorised scores and the mean scores show the attitudes of white females to be more pathological than those of black females, whose attitudes in turn, are more pathological than those of Indian females. The mean scores of males on the BITE Symptom subscale show that white males display the healthiest eating attitudes followed by Indian males and lastly by black males. The categorised scores (Henderson & Freeman, 1987), show a slightly higher proportion of Indian than white males in the normal range. This discrepancy in the findings is not unexpected in view of the wide range of scores within the first (0-9) and last categories (20-30). The large percentage of black males categorised in the ‘unusual eating’ score range may have contributed to raising this group’s mean score, relative to the other male groups.

3.3.3.3 THE SEVERITY SUBSCALE

The Severity subscale measures the frequency of bingeing and/or purging behaviours. Henderson and Freeman (1987) divided the scoring of this scale into 3 categories: normal 0-4; clinically significant 5-9; and pathological 10+ (refer to Table 3.19 and Figure 3.8).

Nine percent of white females and 8% of black females fall into the pathological range (10+) of eating behaviour. However, there are more black females (23%) than white females (20%) in the clinically significant category (5-9), where the influence of laxative use can be seen. Three percent of black males, 2% of white males and no Indian males scored within the pathological range of eating behaviour. Note: The large concentration of black male subjects (18%) in the 'clinically significant' category relative to white males (3%).

TABLE 3.19  
PERCENTAGES AND NUMBERS OF FEMALE AND MALE SUBJECTS IN EACH RACE GROUP ACCORDING TO THE CATEGORISATION OF BITE SEVERITY SUBSCALE SCORE RANGE

	FEMALES			MALES		
	BLACK (n=272)	INDIAN (n=59)	WHITE (n=396)	BLACK (n=172)	INDIAN (n=23)	WHITE (n=183)
Normal Range 0-4	69% (188)	79% (47)	71% (281)	79% (136)	87% (20)	95% (174)
Clinically Significant 5-9	23% (62)	19% (11)	20% (79)	18% (31)	13% ( 3)	3% (5)
Pathological 10+	8% (22)	2% (1)	9% (36)	3% (5)	0%	2% (4)

The results of the Analysis of Variance computed on the Severity Scale show significant main effects of race and sex ( $F=24,69$ ;  $F=16,16$ ;  $P < 0,001$ ) and a significant interaction of race and sex ( $F=3,90$ ;  $P < 0,05$ ) (refer to Table 3.15).

Based on the means of the race by sex groups (refer to Table 3.20), the corresponding interaction plots (refer to Figure 3.11), the post-hoc analysis by the Scheffé Test (indicating the positions of significant mean scores - refer to Table 3.27); the results of the Severity subscale are as follows:

Black females score significantly higher on the Severity subscale than white and Indian females. The identified interaction effect indicates that the difference in disturbed eating between females and males is different for the different race groups. Males in each race group obtain lower mean scores than their female counterparts. However, the difference between the mean scores of females and males in the black race group is smaller than that of the Indian race group which in turn is smaller than that of the white race group. The mean score pattern for males is similar to that of the females. Black males score significantly higher than white and Indian males. There is no significant difference between the mean scores of white and Indian males.

Black females obtained a mean score of  $\bar{x}=3,99$  and were followed by white females  $\bar{x}=3,09$  and Indian females  $\bar{x}=2,71$ . Black males obtained the highest mean score ( $\bar{x}=3,23$ ) of all male groups. White males emerged with the lowest mean score ( $\bar{x}=1,14$ ) of all male groups and were followed by Indian males ( $\bar{x}=1,74$ ) (refer to Table 3.20).

**TABLE 3.20**

### COMPARISON OF MEAN AND STANDARD DEVIATION SCORES ON BITE SEVERITY ITEMS AND THE TOTAL SEVERITY SCALE

	MEAN SCORES					
	FEMALES			MALES		
	Black (n=272)	Indian (n=59)	White (n=396)	Black (n=172)	Indian (n=23)	White (n=183)
FASTING	0,83	1,14	0,69	0,78	0,82	0,31
DIET PILLS	0,33	0,14	0,43	0,12	0,00	0,02
DIURETICS	0,24	0,00	0,11	0,31	0,09	0,01
LAXATIVES	1,51	0,64	0,51	1,42	0,61	0,10
VOMIT	0,21	0,08	0,44	0,07	0,09	0,09
BINGE	0,85	0,71	0,90	0,52	0,13	0,60
TOTAL SEVERITY SCALE	3,99	2,71	3,09	3,23	1,74	1,14
	STANDARD DEVIATIONS					
	FEMALES			MALES		
	Black (n=272)	Indian (n=59)	White (n=396)	Black (n=172)	Indian (n=23)	White (n=183)
FASTING	1,25	1,27	1,07	1,23	1,11	0,70
DIET PILLS	1,05	0,51	1,07	0,51	0,00	0,21
DIURETICS	0,78	0,00	0,58	0,97	0,42	0,15
LAXATIVES	1,23	1,00	1,08	1,18	0,94	0,47
VOMIT	0,69	0,47	1,13	0,41	0,42	0,49
BINGE	1,36	1,20	1,38	0,98	0,34	1,04
TOTAL SEVERITY SCALE	3,14	2,79	4,07	2,90	2,05	1,88

In summary, on the categorised BITE Severity (pathological) score range the percentage of white females (9%) is only slightly higher than the percentage of black females (8%). The mean score of black female and black male subjects on the Severity scale is higher than the other female and male groups due to laxative usage. Furthermore, the large percentage of black males categorised in the 'clinically significant' score range may have contributed to raising this group's mean score relative to the mean score of the white male group.

#### **3.3.3.4 SEVERITY ITEMS ANALYSES**

The individual items on the BITE Severity Subscale were statistically analysed. In addition to the Two-Way ANOVAS, means and standard deviations computed on each of the Severity items, the frequency rate of bingeing and/or purging behaviours categorised as 'never/hardly ever'; 'once a month'; 'at least once a week'; and 'daily' were analysed for each race by sex group. In this way, a more detailed and meaningful interpretation was supplied for each item (refer to Table 3.15 for the Analysis of Variance and Table 3.20 for the corresponding mean and SD scores).



**FASTING (Item 6)**

Fourteen percent of Indian females and 9% of Indian males are fasting at least once a week. Approximately 17% of black subjects (17% of females and 16% of males) fast at least once a week. Five percent of white females and no white males fall into this category (refer to Table 3.21).

**TABLE 3.21**  
**PERCENTAGES AND NUMBERS OF SUBJECTS ON THE FREQUENCY OF FASTING**

	FEMALES			MALES		
	BLACK (n=272)	INDIAN (n=59)	WHITE (n=396)	BLACK (n=172)	INDIAN (n=23)	WHITE (n=183))
Never/Once	75% (201)	56% (33)	72% (285)	76% (131)	65% (15)	86% (157)
Now & Then	9% (25)	31% (18)	23% (91)	8% (14)	26% (6)	14% (26)
Once A Week	13% (35)	9% (5)	2% (8)	13% (22)	9% (2)	0%
At Least Twice A Week	4% (11)	5% (3)	3% (12)	3% (5)	0%	0%

The effects of race and sex are significant ( $F=11,85$ :  $P <0,001$ ;  $F=5,94$ :  $P <0,05$  respectively) (refer to Table 3.15). Based on the means of race by sex groups, it was found that the Indian race group obtained higher mean scores on the fasting item than the other two race groups; Indian females and males fasted more frequently than their counterparts in the black race group and significantly more than their counterparts in the white race group. Females in each group fasted more frequently than their male counterparts (refer to Table 3.20 and Table 3.27).

**DIET PILLS (Item 7a):**

Seventeen percent of white females, 11% of black females and 7% of Indian females use diet pills. At most, 5% of males use diet pills, with more black males than white or Indian males in this category (refer to Table 3.22).

**TABLE 3.22**  
**PERCENTAGES AND NUMBERS OF SUBJECTS ON THE FREQUENCY OF DIET PILLS**

	FEMALES			MALES		
	BLACK (n=272)	INDIAN (n=59)	WHITE (n=396)	BLACK (n=172)	INDIAN (n=23)	WHITE (n=183)
Never	89% (242)	93% (55)	83% (328)	95% (163)	100% (23)	99% (181)
Occasionally	8% (22)	7% (4)	12% (48)	4% (7)	0%	1% (2)
At Least Once A Week	2% (5)	0%	2% (8)	1% (2)	0%	0%
Daily	1% (3)	0%	3% (12)	0%	0%	0%

The effect of sex is significant ( $F=9.93$ ;  $P < 0.01$ ) (refer to Table 3.15). Based on the means of race by sex groups, it was found that females of all race groups use diet pills more frequently than their male counterparts (refer to Table 3.20 and Table 3.27).

**DIURETICS (Item 7b):**

Eleven percent of black females use diuretics (1% at least once a week), only 5% of white females use diuretics (1% at least once a week). No Indian females use diuretics. Black males use more diuretics than do Indian or white male groups. Twelve percent of black males use diuretics (1% at least once a week), 4% Indian males use diuretics (none at least once a week) and 1% of white males use diuretics (none at least once a week) (refer to Table 3.23).

**TABLE 3.23**  
**PERCENTAGES AND NUMBERS OF SUBJECTS ON THE FREQUENCY OF**  
**DIURETIC USE**

	FEMALES			MALES		
	BLACK (n=272)	INDIAN (n=59)	WHITE (n=396)	BLACK (n=172)	INDIAN (n=23)	WHITE (n=183)
Never	89% (242)	100% (59)	95% (376)	88% (151)	96% (22)	99% (181)
Occasionally	9% (24)	0%	3% (12)	10% (17)	4% (1)	1% (2)
At Least Once A Week	1% (3)	0%	1% (4)	1% (2)	0%	0%
Daily	1% (3)	0%	1% (4)	1% (2)	0%	0%

The effect of race is significant (F=13,58: P <0,001) (refer to Table 3.15). Based on the means of race by sex groups, it was found that black female and male subjects use diuretics significantly more frequently than the other two race groups (refer to Table 3.20 and Table 3.27).

**LAXATIVES (Item 7c):**

Approximately two thirds of black students (64% of males and 65% of females), use laxatives. Nine percent of black males and 16% of black females use these at least once a week. Thirty percent of Indian males and females use laxatives occasionally (3% of these females at least once a week). Four percent of white males and 22% of white females use laxatives (1% of males and 6% of females use laxatives at least once a week) - (refer to Table 3.24).

**TABLE 3.24**  
**PERCENTAGES AND NUMBERS OF SUBJECTS ON THE FREQUENCY OF LAXATIVE USE**

	FEMALES			MALES		
	BLACK (n=272)	INDIAN (n=59)	WHITE (n=396)	BLACK (n=172)	INDIAN (n=23)	WHITE (n=183)
Never	35% (95)	70% (41)	78% (309)	36% (62)	70% (16)	96% (176)
Occasionally	49% (133)	27% (16)	16% (63)	55% (95)	30% (7)	3% (5)
At Least Once A Week	15% (41)	3% (2)	5% (20)	8% (13)	0%	1% (2)
Daily	1% (3)	0%	1% (4)	1% (2)	0%	0%

The effect of race is significant ( $F=138,16$ :  $P < 0,01$ ) and the interaction of race and sex is significant ( $F=3,07$ :  $P < 0,05$ ) (refer to Table 3.15). Based on the means of race by sex groups, it was found that black female and male subjects take laxatives significantly more frequently than the other two race groups. The usage of laxatives by white females ( $\bar{x}=0,51$ ) is greater than by white males ( $\bar{x}=0,10$ ). The mean difference between females and males in other race groups, however, is small, thus accounting for the significant interaction effect (refer to Table 3.20 and Table 3.27).

**VOMIT (Item 7d):**

Sixteen percent of white females and 4% of white males vomit; (6% of white females and 1% of white males vomit at least once a week). Ten percent of black females and 3% of black males vomit; (3% of black females and 1% of black males vomit at least once a week). Four percent of Indian females (2% at least once a week) and 4% of Indian males vomit occasionally (refer to Table 3.25).

**TABLE 3.25**  
**PERCENTAGES AND NUMBERS OF SUBJECTS ON THE FREQUENCY OF VOMITING**

	FEMALES			MALES		
	BLACK (n=272)	INDIAN (n=59)	WHITE (n=396)	BLACK (n=172)	INDIAN (n=23)	WHITE (n=183)
Never	90% (245)	96% (57)	84% (333)	97% (167)	96% (22)	96% (176)
Occasionally	7% (19)	2% (1)	10% (40)	2% (3)	4% (1)	3% (5)
At Least Once A Week	2% (5)	2% (1)	4% (16)	1% (2)	0%	1% (2)
Daily	1% (3)	0%	2% (7)	0%	0%	0%

The effects of race and sex are significant ( $F=3,47$ :  $P < 0,05$ ; and  $F=4,56$ :  $P < 0,05$  respectively) (refer to Table 3.15). White females vomit significantly more than black and Indian females. In the case of males, no significant difference was found between the race groups ( $P > 0,05$ ) (refer to Table 3.20 and table 3.27).

**BINGE (Item 27):**

Fifteen percent of white females binge at least once a week, whilst 14% of black females and 12% of Indian females binge this often. Eleven percent of white male binge at least once a week, compared to 6% of black males and no Indian males in the same category (refer to Table 3.26).

**TABLE 3.26**  
**PERCENTAGES AND NUMBERS OF SUBJECTS ON THE FREQUENCY OF BINGEING**

	FEMALES			MALES		
	BLACK (n=272)	INDIAN (n=59)	WHITE (n=396)	BLACK (n=172)	INDIAN (n=23)	WHITE (n=183)
<b>Never</b>	65% (177)	68% (40)	61% (242)	72% (124)	87% (20)	68% (124)
<b>Occasionally</b>	21% (57)	20% (12)	24% (95)	22% (38)	13% (3)	21% (39)
<b>At Least Once A Week</b>	13% (36)	12% (7)	12% (47)	5% (9)	0%	11% (20)
<b>Daily</b>	1% (2)	0%	3% (12)	1% (1)	0%	0%

The effect of sex was found to be significant ( $F=11,97$ :  $P < 0,001$ ) (refer to Table 3.15).  
The bingeing behaviour of females was found to be significantly higher when compared to that of males. No significant race effect was found (refer to Table 3.20 and Table 3.27).

**TABLE 3.27**  
**SCHEFFÉ TEST RESULT: CONFIDENCE INTERVALS FOR THE EAT AND BITE SCALES AND SUBSCALES AND SELECTED ITEMS FOR FEMALE AND MALE SUBJECTS IN DIFFERENT RACE GROUPS**

	FEMALES			MALES		
	WHITE/BLACK	WHITE/INDIAN	BLACK/INDIAN	WHITE/BLACK	WHITE/INDIAN	BLACK/INDIAN
EAT TOTAL	-4,01:1,16	0,65:8,52*	0,63:10,08*	-9,62:-5,96*	-5,40:2,22	2,37:10,0*
FACTOR I DIETING	-1,76:1,17	0,62:5,83*	0,84:6,21*	-4,21:-2,35*	-1,66:2,21	1,61:5,50*
FACTOR II BULIMIA & FOOD PREOCCUPATION	0,12:1,29*	0,23:2,30*	-0,50:1,62	-1,28:-0,51*	-0,78:0,82	0,10:1,71*
BITE TOTAL	-2,00:1,24	0,75:4,98*	0,46:5,44*	-5,90:-3,20*	-4,50:1,12	0,04:5,68*
SYMPTOM SUBSCALE	-0,94:1,24	0,06:3,94*	0,14:3,84*	-3,76:-1,95*	-3,01:0,75	0,16:3,62*
SEVERITY SUBSCALE	-1,60:-0,19*	-0,87:1,62	0,01:2,56*	-2,71:-1,46*	-1,91:0,70	0,17:2,80*
FASTING	-0,36:0,08	-8,83:-0,04*	-0,70:0,10	-0,73:-0,21*	-1,06:-0,02*	-0,59:0,49
DIET PILLS	-0,10:0,29	-0,06:0,64	-0,16:0,56	-0,19:0,00	-0,17:0,22	-0,08:0,31
DIURETICS	-0,25:-0,00*	-0,10:0,33	0,01:0,46*	-0,47:-0,12*	-0,44:0,28	0,13:0,59*
LAXATIVES	-1,21:-0,77*	-0,51:0,25	0,46:1,26*	-1,55:-1,08*	-0,99:0,02	0,32:1,29*
VOMIT	0,04:0,41*	0,03:0,67*	-0,20:0,45	-0,09:0,14	-0,23:0,25	-0,26:0,22
DRINGE	-0,21:0,30	-0,27:0,65	-0,33:0,62	-0,18:0,33	-0,06:1,01	-0,14:0,93

\* P < 0,05

### 3.4 FINDINGS PERTAINING TO THE THIRD AIM OF THE STUDY: THE DEVELOPMENT OF A PREDICTIVE MODEL

The biographical variables of where the subject was raised, SES and the weight related variables of the heaviest and the lightest weight at present height (relative to that height), perception of present weight, BMI categorisation of weight were examined as predictors of the BITE Symptom and Severity subscale scores, of Garner's EAT scores and of the overall criterion of pathology used in the present study (i.e. a score in the prescribed pathological range in all three scales or any combination of two scales).

The technique of stepwise multiple regression was used to investigate the predictive relationships. Only black and white female subjects were used, as the numbers of males and Indian females with scores in the pathological range were low (refer to Table 3.28, Table 3.29 and Table 3.30).

#### 3.4.1 BLACK FEMALES

In the case of black females two variables emerged as significant predictors of pathological eating behaviour - father's occupation and urban/rural origin.

The variable that emerged as a significant predictor on the EAT was father's occupation, explaining 7% of variance in the EAT scores. Father's occupation was used to denote the socio-economic status of subjects. Of the 46 black females who obtained pathological EAT scores over half (57%) came from the upper socio-economic level, 29% came from the middle socio-economic level and 23% from the lower.

When the BITE Severity subscale and Symptom subscale were considered as separate criteria - the only significant predictor to emerge was whether subjects



were raised in an urban or rural environment. This predictor contributed 12% and 11% respectively to the variance of the Severity and Symptom subscales. Of the 8 black females who scored in the pathological range of the BITE Symptom subscale, 6 were mainly urban raised, while 5 of the 8 who scored in the pathological range of the BITE Severity subscale were urban raised. No significant predictor emerged when the EAT and BITE scales were combined.

**TABLE 3.28**  
**SUMMARY RESULT OF A STEPWISE REGRESSION MODEL OF PATHOLOGY ON BIOGRAPHIC, DEMOGRAPHIC AND WEIGHT RELATED VARIABLES FOR BLACK FEMALES**

Criterion	Significant Predictors	df	Mean Square		F Value	R <sup>2</sup>
			Regression	Error		
EAT Garner's Scoring (n=46)	Father's occupation (SES)	1;54	371,85	95,61	3,89*	0,07
BITE Symptom Subscale (n=8)	Where raised: urban/rural	1;54	136,00	20,21	6,73*	0,11
BITE Severity Subscale (n=5)	Where raised: urban/rural	1;54	91,50	11,88	7,70**	0,12

\*P <0,05

\*\*P <0,01

3.4.2 WHITE FEMALES

A somewhat better prediction of eating pathology is evident in the case of white females. The predictors of perception of own weight, BMI categorisation, maximum weight ever lost, desired weight loss and place raised were the predictors responsible for the determination of 20% of the variance in Garner's EAT scores, 23% and 28% respectively of the variance in BITE Symptom and Severity subscale scores, and 11% of the variance in the criterion of overall pathology. Of these 5 predictors, the first 3 determine the greatest proportion of variance (refer to Table 3.29).

TABLE 3.29  
CONTRIBUTION OF VARIANCE TO CRITERION PREDICTION AND SIGNIFICANCE  
OF EACH PREDICTOR FOR WHITE FEMALES

Criterion	Significant Predictors	F Value	R <sup>2</sup>
EAT (Garner's Scoring) (n=46)	Perception of own weight	11,96***	0,15
	BMI Categorisation	15,32***	0,19
	Maximum weight loss	43,22***	0,12
	Where raised: urban/rural	4,08*	0,20
BITE Symptom Subscale (n=44)	Perception of own weight	57,44***	0,16
	BMI Categorisation	4,87**	0,23
	Maximum weight loss	17,10***	0,20
	Desired weight loss	3,77*	0,21
BITE Severity Subscale (n=36)	Perception of own weight	24,00***	0,25
	BMI Categorisation	11,43***	0,28
	Maximum weight loss	45,01***	0,20
Combined Scales (n=44)	Perception of own weight	24,05***	0,09
	BMI Categorisation	3,95*	0,11
	Maximum weight loss	7,57**	0,10

\*P <0,05  
\*\*P <0,01  
\*\*\*P <0,001

TABLE 3.30

**SUMMARY RESULT OF A STEPWISE REGRESSION MODEL OF PATHOLOGY ON BIOGRAPHIC, DEMOGRAPHIC AND WEIGHT RELATED VARIABLES FOR WHITE FEMALES**

Criterion	Significant Predictors	df	Mean Square		F Value	R <sup>2</sup>
			Regression	Error		
<b>EAT (Garner's Scoring) (n=46)</b>	Perception of own weight BMI Categorisation Maximum weight loss Where raised	4;309	4203,68	211,64	19,86***	0,20
<b>BITE Symptom Subscale (n=44)</b>	Perception of own weight BMI Categorisation Maximum weight loss Desired weight loss	4;309	766,63	33,92	22,60***	0,23
<b>BITE Severity Subscale (n=36)</b>	Perception of own weight BMI Categorisation Maximum weight loss	3;310	490,92	12,21	40,21***	0,28
<b>Combined Scales (n=44)</b>	Perception of own weight BMI Categorisation Maximum weight loss	3;310	2,78	0,23	12,13***	0,11

\*\*\* P < 0,001

Certain trends were identified amongst white females who obtained pathological scores (refer to Table 3.30). The overall majority of these females have exaggerated weight perceptions, 91% considered themselves to be overweight or very overweight when they were actually average or underweight. In terms of the BMI categorisation (i.e. actual weight), 68% of these white females were of average weight, 22% were underweight and 10% were overweight. The criterion of maximum weight ever lost is divided into three groups: 10% lost 5 kilograms, 55% lost between 6 - 14 kilograms and 36% lost 15 or more kilograms. Eighty nine percent of these subjects have a desire to

lose 10 or more kilograms. Ninety one percent of white females with pathological scores were urban raised.

In summary in the case of black females, the only significant predictor of the BITE Scales was where the subjects were raised (urban/rural), the only significant predictor on the EAT was father's occupation (denoting SES). In the case of white females, perception of weight, BMI categories, maximum weight over lost and desired weight loss were significant predictors of variance of the EAT and BITE Severity subscale and BITE Symptoms subscale.

### 3.5 SUMMARY OF THE RESULTS

A total of 1,105 university students from the universities of Natal, Witwatersrand and the North participated in this study. Female and male students from three racial groups were included. There were 727 female students which comprised approximately two-thirds of the sample: 396 white females; 272 black females; and 59 Indian females. There were 378 male students which comprised one-third of the sample: 172 black males; 183 white males; and 23 Indian males.

In terms of marital status, almost all the students were single. The majority of black students lived in university residences. In contrast, most Indian and white students lived in family homes. There was a similar distribution of black students from the middle and lower socio-economic strata. The majority of Indian students came from the middle socio-economic strata. Approximately two-thirds of the white sample came from the upper socio-economic strata. The majority of black, Indian and white subjects were urban raised.

The majority of all subjects were of average weight according to the BMI. Compared to white and black female and male samples, the Indian sample had the highest proportion of underweight subjects. The black female and male samples had the highest proportion of overweight subjects, compared to the other groups.

The majority of black, Indian and white males perceive their weight accurately. In contrast, the minority of underweight or average weight women in all race groups have accurate weight perceptions. However, most overweight black women and all overweight white women perceive themselves as such. A significantly higher proportion of females than males in each race group considered themselves heavier than their BMI assessment. Approximately 40% of black and Indian females have distorted weight perceptions (perceive overweight what is actual), compared to 60% of white females in the same category. Fewer than 20% of males in all groups have this distorted perception.

In order to establish the prevalence of disturbed eating symptoms, those subjects who scored within the pathological range on combinations of the BITE and EAT were identified.

- (a) Those subjects who obtained pathological scores on both the EAT total scale and BITE total scale were as follows: white females 13%; black females 7%; Indian females 3%; white males 2%; black males 1%; and no Indian males.
- (b) Those subjects who obtained pathological scores on two or more scales; EAT scale and/or Severity scale and/or Symptom scale and were as follows:

white females 11%; black females 5%; Indian females 2%; white males 1%; black males 1%; and no Indian males.

More females than males in each race group obtained pathological scores on the EAT and BITE instruments (in all assessed combinations of scales). The percentage scores indicate that the prevalence of eating disturbances was highest among white women, followed by black women, and then by Indian women. Black and white males reflected a similar prevalence of disturbed eating symptoms. No Indian males were identified.

An intercorrelation matrix was computed on the BITE total scale, Symptom and Severity scales, EAT total scale, Dieting and Bulimia and Food Preoccupation scales. All scales intercorrelate significantly ( $P < 0.001$ ).

The EAT (40) scale measures abnormal eating behaviours and attitudes towards food, body weight and shape. A single composite score is calculated on the EAT. The cut-off score of 30 or more points is indicative of eating pathology. High scorers were as follows: white females scored most highly (19%), followed by black females (17%), Indian females (9%), black males (7%), white males (1%) and no Indian males.

In addition to the EAT (40) total scale, Factor I Dieting and Factor II Bulimia and Food Preoccupation were also analysed. As Garner generally assigns value only to extreme responses as indicative of pathology, the researcher sought to identify subjects who endorsed the 'sometimes' category, as they may have potential or latent eating problems. Hence, the EAT was subject to a second scoring method which took into account the responses in the 'sometimes' category. The correlation

coefficient between the two scoring methods is highly significant ( $R=0,90$ ;  $P<0,001$ ).

Two-Way Analyses of Variance were computed on the total EAT, the Dieting Factor and the Bulimia and Food Preoccupation Factor using the two scoring methods. The corresponding means and standard deviations are presented. Irrespective of which of the two scoring methods is used, the main effects of race and/or sex and their interaction effect on the total EAT and factor scores are significant. This interaction effect implies that differences between EAT total and factor scores are different for the different race groups. On all three scales, the difference between the scores of females and males in the black race group is smaller than that of the Indian race group which in turn is smaller than that of the white group. Hence, the significant interaction.

A similar pattern of mean scores emerged on the EAT scale, Dieting and Bulimia dimensions. Black, Indian and white females score higher than their male counterparts. On the EAT scale and Dieting dimension (according to Garner's method) black females have a slightly higher mean score (which is not significant) than white females. However, when the 'sometimes' category is acknowledged, white females have a slightly higher mean score than black females. Irrespective of the scoring method used, white females have a significantly higher mean score than all female groups on the Bulimic dimension.

The BITE total scale measures the prevalence of bulimic behaviours and associated attitudes, a single composite score of 25 or more points is considered to be pathological. The percentage of subjects in each race group who obtained scores above the stipulated criterion are as follows: white females 13%; black females 8%; Indian females 3%; white males 2%; black males 1% and no Indian males.

The Symptom scale records the degree of symptoms present and the subjects' attitude towards food and eating. Four categories of subjects are identified ranging from healthy to highly disordered. The percentages of subjects in each race group who are classified as highly disordered are as follows: white females 11%; black females 3%; Indian females 2%; white males 3%; black males 1% and no Indian males.

The Severity scale measures the frequency of bingeing and/or purging behaviours. Three categories of subjects are identified ranging from normal to pathological. The percentages of subjects in each race group who are classified as pathological are as follows: white females 9%; black females 8%; Indian females 2%; black males 3%; white males 2% and no Indian males.

Two-Way Analyses of Variance computed on the BITE total scale, Symptom and Severity scales, showed a significant interaction of race and sex. The interaction effect indicates that the difference in disturbed eating pattern between females and males is different for the different race groups.

The BITE scale reflected a similar pattern of gender discrepancy that emerged in the EAT scale. Females in each race group displayed a higher degree of bulimic symptoms than their male counterparts. On the BITE scale the raised mean score of black males may have been influenced by a concentration of these subjects in the 'unusual eating' category (of the Symptom subscale) and the 'clinically significant' category (of the Severity subscale). An item analysis of the Severity subscale further indicates that the raised mean score of black females and males may be specifically due to the usage of laxatives.



On the Symptom subscale, white females emerge as the most disturbed of all other female groups and white males emerge as the healthiest group with the lowest mean score of all male groups. (The mean scores of white and Indian males, however, were similar in magnitude on the BITE scales and subscales, that is to say, that the mean differences between these two male groups were not found to be significant).

The individual items of the Severity scale were analysed:

**FAST:** Forty five percent of Indian females and 35% of Indian males fast. Both race and sex effects are significant. Based on the means of race by sex groups, it was found that Indian females and males obtained the highest mean scores. White students were found to fast least frequently of all groups.

**DIET PILLS:** Seventeen percent of white females, 11% of black females and 7% of Indian females use diet pills. At most 5% of all males use diet pills. The effect of sex is significant.

**DIURETICS:** Eleven percent of black female and 12% of black male subjects used diuretics. The effect of race is significant with black female and male subjects scoring higher than the other two race groups.

**LAXATIVES:** Approximately two-thirds of black students use laxatives. A significant race effect was found with black female and male subjects taking laxatives more often than was the case in the other two race groups.

**VOMIT:** Sixteen percent of white females, 10% of black females and 4% of Indian females vomit. Significant race and sex effects were found with white and black females vomiting more frequently than their male counterparts.

**BINGE:** The pattern of percentage scores in the category of bingeing reflects a somewhat even distribution of all female groups; 15% of white females, 14% of black females and 12% of Indian females binge at least once a week. No significant race effect was found, however, the bingeing behaviour of females was found to be significantly higher than males.

A predictive model of pathology was developed. The technique of stepwise multiple regression was used to investigate the predictive relationships. Only black and white females were used as the numbers of males and Indian females who obtained pathological scores were low.

In the case of black females, it was found that of the 8 subjects who scored in the pathological range of Symptom scale, 6 were urban raised, while 5 of the 8 who scored in the pathological range of the Severity scale were urban raised. On the EAT scale, the significant predictor that emerged was father's occupation denoting the socio-economic status of subjects. Over half (57%) of black females who obtained pathological scores on the EAT came from the upper socio-economic stratum. No significant predictor emerged when the EAT and BITE scales were combined.

In the case of white females, certain trends were identified. The overall majority of these females have exaggerated weight perceptions; 91% considered themselves to be overweight or very overweight when in fact they were according to the BMI

average or underweight. In terms of the BMI categorisation, 68% of these females were average, 22% were underweight and 10% were overweight. The criterion of maximum weight ever lost is divided into 3 groups: 10% lost 5 kilograms, 55% lost between 6-14 kilograms, and 36% lost 15 or more kilograms. Almost 90% of these women expressed a desire to lose 10 or more kilograms in weight. The majority of females who obtained pathological scores were urban raised.

## CHAPTER 4 : DISCUSSION

### 4.1 PREVALENCE

The prevalence of (possible) eating disorders is taken in this study to mean those subjects who obtained consistently high scores on all scales used in the study. Thirteen percent of white, 7% of black and 3% of Indian females respectively were identified as having a possible eating disorder. Two percent of white, 1% of black and 0% of Indian males respectively were identified as having a possible eating disorder (these diagnoses would have to be confirmed in a clinical interview). As such, the findings from this study are consistent with those reported in the literature. Connors and Johnson (1987) summarised the findings of 17 studies and reported that the prevalence of eating disorders ranged from 5% - 20% in females and 0% - 5% in males. Specifically, the rate of bulimia nervosa in university women has been reported at 5% (Hart & Ollendick, 1985); 8% (Pyle, Halvorson, Neuman & Mitchell, 1986); and 19% (Halmi et al., 1981). Reports of relatively high rates of eating disturbances on university campuses suggests that intense academic and social pressures may increase the likelihood of such disturbances in the student population (Klemchuk et al., 1990; Striegel-Moore et al., 1989).

The cut-off score of 30 or more points on the EAT (40) is said to be indicative of pathological eating behaviour and attitudes. The gender discrepancy is retained; the proportion of females who scored in the pathological range exceeded that of males in each group: white females (19%); black females (17%); Indian females (9%); black males (7%); white males (1%); and no Indian males. In a similar study of South African university students conducted by Sherwood (1994), the EAT scores of white females (15%), black females (20%), black males (8%) and white males (2%) compare favourably with the findings of this research. The most striking

difference is that in the Sherwood (1994) study more black females than white females obtained pathological scores on the EAT, whilst the present study found the reverse pattern with only a slight (2%) discrepancy between white and black females. In another study of university students, Grey (1995) reports substantially lower percentages of female and male students in all race groups scoring in the pathological range of the EAT than the present study.

A finding that should be noted is that a higher percentage of black males than white or Indian males scored above the stipulated criterion on the EAT. A similar pattern is reported by Grey (1995) and Sherwood (1994). It is interesting to note, however, that the present study identified a dramatic decline in the percentage of black males when a further analysis was undertaken of those who obtained pathological scores on both the EAT and BITE total scales (black males 1% and white males 2%). Even when combinations of the Severity subscale/Symptom subscale/EAT scale were taken into account the decline in the percentage of black males persists (i.e. those who obtained scores in the pathological range on all or any combination of two scales - black males 1% and white males 1%) (refer to Chapter 3, section 3.3.1).

Although the EAT has been used in non-western cultures (Mumford et al., 1991; Nasser, 1986), it is maintained that cross-cultural validation of the EAT in cultures with non-English as the mother tongue is still limited (Rathner & Messner, 1993), and may give rise to a number of false positives (Carter & Moss, 1984). Alternatively, Pumariega (1986) found a significant correlation between acculturation and higher EAT scores; 20% of a sample of Hispanic and black subjects residing in Texas obtained scores over 30 points on the EAT. One may speculate that each of these factors may contribute in part to the presentation of EAT scores in this study. Furthermore, in terms of the high percentage of female

scorers, Garner and Garfinkel (1979) point out that this presentation may not necessarily indicate the presence of an eating disorder, but rather refers to a population that is concerned with weight (such as chronic dieters) but who do not manifest classical weight loss.

The stricter criteria of the BITE identified lower percentages in each race and sex group than the EAT. The results were as follows: white females 13%; black females 8%; Indian females 3%; white males 2%; black males 1% and no Indian males. Sherwood (1994) reported lower percentages; specifically she identified nearly 7% of white females, 5% of black females, nearly 2% of black males and no white males to be scoring in the pathological range of the BITE.

The Symptom and Severity subscales compare favourably with the categorised percentage scores obtained on the BITE total scale with no significant changes in the gender or racial discrepancy. The findings on all scales of the BITE are in keeping with the prevalence findings of bulimia in the literature (Connors & Johnson, 1987; Fairburn & Beglin, 1990).

It is interesting to note that the Indian female and male sample exhibited the healthiest eating behaviours and attitudes, relative to the other two racial groups examined. This may in part be attributed to an overall low BMI and a generally low level of distorted perceptions regarding body weight. Lucero et al. (1992) in a study on the frequency of eating problems in college women in the United States, reported that relative to their Asian peers, their sample of Caucasian women were 5.5 times more likely to score above the cut-off score for eating problems on the EAT test. The contrasting results obtained by Dolan et al. (1990) and Mumford et al. (1991), who reported that eating disturbances were significantly more prevalent

among Asian women (in Britain) than white women, are challenged by Lucero et al. (1992). They maintain that the design and data of both these studies restrict the generalisability of their interpretation. Certainly, the relatively low prevalence of disordered eating in the Indian sample in the present study and other South African research (Grey, 1995) is in accordance with the position and results reported by Lucero et al. (1992). Furthermore, cultural factors need to be acknowledged in an explanation of these findings. The South African Indian student may have vastly differing cultural experiences to the Asian students studied by Dolan (1990) and Mumford et al. (1991) and Mumford et al. (1992). Collectively, the data from these studies supported the conclusion that cultural background may have an influence in experiencing (and perhaps even in the reporting of) symptoms. The present data further suggests that the level of these disturbances cannot be assumed to be similar for all subjects categorised broadly as 'Asian' in all countries.

## 4.2 GENDER FINDINGS

Females in each race group scored consistently higher than their male counterparts. The striking discrepancy in the prevalence of eating disturbances between female and male subjects which emerged in this study is substantiated by the findings of many studies in the literature (Drewnowski et al., 1994; Fairburn & Hay, 1994).

The Dieting and Bulimia Factors on the EAT scale showed the mean scores of all male groups to be lower than the mean scores obtained by their female counterparts. For example, on the Dieting Factor, white females obtained a significantly higher mean score ( $\bar{x}=8,55$ ) than that of white males ( $\bar{x}=2,09$ ). Furthermore, a similar finding emerged on the Severity scale where the frequency in purging and restraining behaviours (fasting, diet pills, diuretics, laxatives, vomiting and bingeing) were more prevalent in females than males of all race groups.

Examples: at most 5% of all male groups use diet pills, compared to 17% of white females; 11% of black females and 7% of Indian females; and 16% and 10% respectively of white and black females vomit to lose weight, compared to 4% and 3% of white and black males. This compares with the findings of Halmi et al. (1981) who found that along gender lines, almost 12% of females vomit compared to 6% of males. Abrams et al. (1993) found a slightly lower prevalence (than identified in this study) along racial lines; 12% of white females vomit and 7% of black women vomit to lose weight.

Gender discrepancies in the prevalence of disturbed eating behaviours are explained in terms of the different standards of attractiveness which are applied to females and males. Cultural factors 'protect' males from developing eating disorders, the most central factor being the difference between the female and male 'ideal' body type (Carlat & Camargo, 1991). The 'ideal' body type of most males is identified to be the muscular mesomorphic physique, which is perceived by both sexes as the embodiment of the stereotypically 'masculine' traits such as independence and aggressiveness. In contrast, the ectomorphic physique is perceived negatively as a male ideal body type by both females and males and is associated with loneliness and weakness. However, among females, the ectomorphic physique is associated with femininity and success. Hence, dieting has two very different implications for females and males; for females, dieting enables them to strive towards their ideal body, whilst in average weight males dieting moves them away from their mesomorphic ideal. Hence, males are culturally 'discouraged' from engaging in dieting, one of the prime precipitants of bulimia nervosa (Polivy & Herman, 1985). Binge eating in males is more socially sanctioned than in females (Katzman et al., 1984). As such, there is a lower likelihood for binge



eating to manifest in bulimia as it is rarely followed by guilt and the compensatory purging behaviours (Carlat & Camago, 1991).

The gender discrepancy is retained in relation to body weight perceptions; a significantly higher proportion of females than males in each race group consider themselves to be heavier than their actual BMI. The mean percentage of white, Indian and black women, who perceive themselves as overweight when they are actually underweight or average, is 59%, 43% and 38% respectively. Fewer than 20% of males in all racial groups have this distorted perception. This finding is consistent with the findings in the literature where a diverse body of evidence can be marshalled in support of the assertion that a thin body type has been embraced as the cultural ideal for females accompanied by distortions in body image (Garner, Olmsted & Garfinkel, 1983). For example, Killen et al. (1994) found that 33% of a sample of female students perceived themselves to be overweight or very overweight when in fact they were within the normal parameters. In another sample of female college students 38% were identified to be actually underweight, only 5% of them perceived their weight to be below average (Gray, 1977).

From the sample findings in this study, a predictive model of eating disorders was developed. This model identifies the person most at risk for eating disturbances to be a white female university student who is urban raised, of average weight (BMI), but who has exaggerated weight perceptions and a desire to lose at least 10 kilograms of weight. The literature reports that white females were likely to develop eating disorders and disturbances in response to perceived rather than actual weight problems (Abrams et al., 1993). The literature also confirms that women who are urban raised are more likely to develop eating disorders than their counterparts who are raised in rural areas (Yates, 1990). No socio-economic

stratum emerged as a significant predictor of disturbed eating behaviour on any of the scales used in this study for the white female sample. This finding is consistent with studies which maintain that there is an even distribution of eating disorders across all strata (Dolan et al., 1989; Gross & Rosen, 1988; Rand & Kulda, 1995).

This study found that the black female student most at risk for developing eating disturbances is urban raised and comes from the upper socio-economic strata. Haynes (1995) in a discussion of the 'rural-urban factor', found that South African (black/urban/literate) women who obtained high scores on the measurement of westernisation, reported greater levels of dissatisfaction with their body shape and weight than black rural women. Furthermore, the findings of the present research are in keeping with the findings in the literature abroad which identifies women from minority or non-westernised cultures to be at risk for developing eating disorders as they move away from traditional values which may include comfort with extra weight (Mumford et al., 1992; Yates, 1990). Silber (1986) found that displacement or upward mobility may be essential to the development of eating disturbances in non-westernised groups. In his study of Hispanic and black women, those who had eating disorders were predominantly children who had professional parents and were from the upper/middle SES. Similarly, Holden and Robinson (1988) reported that the educational levels and social status were higher in black females who had eating disorders, than in the general black population.

#### 4.3 RACIAL FINDINGS

The findings in the study showed that in terms of the categorised (percentage) scores white females consistently emerged with the most pathological eating disturbances. However, two Severity items emerged - fasting and laxative use - where race was shown to be a dominant factor necessitating further elaboration.

A relatively low prevalence of disturbed eating behaviour was found in the Indian sample. However, when individual test items were subjected to analysis, Indian females and males fasted more frequently than the black race group and significantly more so than the white race group. It is necessary to point out, that 33 out of the 34 Indian subjects who engaged in fasting made additional notes as to the importance of fasting during the month of Ramadan. Bhadrinath (1990), in a study of Asian Muslims in London, stressed the need for a better understanding of attitudes towards body shape and food within the Muslim subculture. He explains that Ramadan presents Muslims with a socially acceptable and even expected period of fasting, followed by pressures to consume large quantities of food. Support for the interaction between culture/religious ritual to food and eating disturbances is cited by the author. He reports that Ramadan can serve as a trigger in the development of eating disorders, and exacerbate eating disturbances in those Muslims who are already experiencing a pathological relationship with food. Furthermore, arising out of religious fasting, secular periods of fasting (without tantamounting into full-blown eating disorders) are prone to become habitual in the Muslim culture. This may account for the finding in this study of the high frequency of fasting in the Indian sample.

This study also found that black females and males used laxatives and diuretics significantly more frequently than the other two race groups. Anecdotal reports from health workers in the community and local hospitals indicated that laxatives and diuretics are used extensively in the black African community as a means of 'cleansing'/purging the body of impurities. Anthropological research by Leclerc-Mandala (1994, cited in Grey, 1995) confirms these reports and explains that some rural and urban Africans believe that an accumulation of bile in the body 'inyongo' causes a spectrum of emotional and physical symptoms such as depression, anxiety, influenza and cancer.

Hence, in order to cleanse the body of this bile, routine purging medicines are used which have a laxative and diuretic effect. This may provide an explanation as to the high frequency of laxative and diuretic usage in the black student sample. Further research needs to be conducted in this area specifically focusing upon the psychological features and the manifestations these purging behaviours may have upon eating behavior.

Another important racial finding that emerged in this study is the general trend of mean scores of the black sample: black males obtained overall higher mean scores than white and Indian males and black females obtained mean scores that were similar in magnitude to those of white females.

The relatively high mean scores of black males identified in this study is supported by other research which found that black males obtained higher mean scores than white and Indian males (Grey, 1995); and white and coloured males (Sherwood, 1994). Specifically, on the EAT the present study identified the mean scores of black and white males as  $\bar{x}=16,38$  and  $\bar{x}=8,58$  respectively. These scores compare well with those reported by Sherwood; black males  $\bar{x}=16,23$  and white males  $\bar{x}=9,40$ . Similarly, the mean scores obtained on the BITE in both studies yielded similar results. In this study the mean score of black males is  $\bar{x}=10,17$  and white males is  $\bar{x}=5,22$ . In the Sherwood study, the mean score for black males is  $\bar{x}=9,53$  and white males is  $\bar{x}=5,0$ .

The higher BMI of black males may in part account for their higher mean scores. However, cognisance should be taken of the possible role of acculturation in explaining these findings.

The literature highlights the disintegration of traditional values and norms and the concomitant stresses arising from the acculturative process as possible reasons for the high prevalence of disordered eating in non-western populations (Ahmed et al., 1994; Furukawa, 1994; Hooper & Garner, 1986). Such stresses are identified as possible generators of internal psychological conflict manifesting in various psychiatric disorders including eating disorders and disordered eating behaviour. This explanation may be true not only for the black South African female but also for the black South African male.

The relatively high mean scores of black women identified in this study is also supported by the research (Grey, 1995; Sherwood, 1994; Winship, 1996). Indeed, the Bulimia and Food Preoccupation Factor of the EAT emerged as the only scale in the study in which white females obtained a significantly higher mean score than black females. This finding is consistent with a plethora of literature abroad which identifies white female students to be the most at risk group for engaging in bulimic behaviours (Drewnowski et al., 1994; Fairburn & Beglin, 1990; Rand & Kulda, 1991; Rucker & Cash, 1992). This finding is also supported by Grey (1995) and Winship (1996) who both found that their white female student samples obtained higher scores on measures of bulimic behaviour than their black female samples.

The present study found that black females obtained higher mean scores (but not significantly higher) than white females on the EAT (total) Scale, Dieting Factor and the BITE (total) Scale.

On the EAT (total) Scale the present study did not find a significant difference in the magnitude of mean scores between black females ( $\bar{x}=20,48$ ) and white females ( $\bar{x}=19,05$ ). Whilst the mean score of black females ( $\bar{x}=20,44$ ) in the Sherwood (1994) study compares favourably with those of the present study, the mean score

of her white female sample ( $\bar{x}=16,34$ ) is significantly lower than her black female sample.

The Dieting Factor of the EAT in this study identified black females as having a slightly higher (but not significantly higher) mean score than white females. Winship (1996) found that black females exhibited a higher drive for thinness than white females. Similarly, Grey (1995) found that black female students have significantly thinner body ideals than white female students.

The BITE (total) Scale showed the mean score ( $\bar{x}=13,19$ ) of black females to be higher, but not significantly so, than that of white females ( $\bar{x}=12,44$ ). A similar pattern emerged on the BITE Scale in the Sherwood study, albeit her mean score results were lower; black females ( $\bar{x}=11,29$ ) and white females ( $\bar{x}=10,03$ ).

The Severity subscale identified black females as having a significantly higher mean score than white females. An item analysis of this subscale indicates that this raised mean score can be attributed to the purging behaviours (specifically laxative and diuretic usage) of black women. This finding is supported by Grey (1995) who also identified a high incidence of laxative usage in his black sample.

The finding of this study that black South African female students are exhibiting disturbed eating behaviour and attitudes to a similar or even higher degree than their white counterparts seems to indicate that the acculturation process is moving rapidly. South Africa is presently undergoing substantial changes on all levels - economic, political and socio-cultural. Haynes (1995) found no significant difference in the degree of body image dissatisfaction between her white and black female student samples. In her study increased westernisation was significantly associated with body image dissatisfaction. Brown and Konner (1987, in Lee, 1993)

report that the growing homogenisation of cultural values across different cultural barriers make it no longer true to maintain stereotypically that all non-western cultures still cherish plumpness. Lee (1993) continues the argument by claiming that it would be erroneous to speak of a categorical splitting of cultures into western and non-western in the epidemiological study of eating disorders. This argument was proposed for the Chinese women of Hong Kong, however, it is equally apposite to the findings obtained in this study, in terms of the black women of South Africa.

Indeed, newspaper and magazine articles report that in South Africa eating disorders traditionally only associated with white affluent women intent on starving themselves in the midst of plenty is about to change (Cosmopolitan, March 1996).

The homogenisation of cultural values and increased standards of living will lead more black and Asian women to emulate white women (Star, July 6 1995). Mpine Qakisa (Star, June 25 1992) reports that eating disorders in the black community were unheard of a few years ago, however, as black children become integrated into the white community, they become increasingly exposed to western values and excesses, and as such, are more at risk for the development of eating disturbances. Gugu Sibiya (Beauty editor of Pace magazine reported in the Sunday Times Metro, August 29, 1993) maintains that "the perception of 'plump is beautiful' in African society - as it was in the Netherlands during the time of Reubens - is certainly not true today .... Nowadays, the media - television and magazines - portray slim people as being touted. Black women feel they want to belong to the mainstream culture and so strive towards conformity .....and if being slim is seen to be beautiful, then black women think they have to be slim." Abrams et al., (1993) found that the eating disorders among African American women are directly related to the degree to which they assimilate western culture.

#### 4.4 LIMITATIONS OF THE STUDY

The researcher recognises the inherent limitations of assessing subjects based on self-report questionnaire data. However, the questionnaire format allowed for data collection in a sample of this size ( $n=1105$ ). Moreover, as bulimic symptoms are usually shrouded in secrecy, the questionnaire format assures anonymity and therefore, subjects are more likely to report these behaviours (Smith & Krejci, 1991). One major source of variability in the field of transcultural comparisons can be found in diverse languages (Neumarker et al., 1992). Although all the subjects in this study spoke English, it was not the first language for some groups and as such may have negatively impacted upon the interpretation of questions and the accuracy of responses on instruments that were available only in English. Furthermore, self-reporting of weights and height could be inaccurate and thereby undermine BMI assessments (Fairburn & Beglin, 1994). The low sample size of Indian males ( $n=23$ ), could have misrepresented information pertaining to this particular group of students. Frequency of behaviour as a measure is open to criticism, however, Henderson and Freeman (1987) indicate that it should serve as an alerting sign to those analysing the data, rather than a precise representation of frequency of behaviours.

#### 4.5 IMPLICATIONS OF THE STUDY

In the United States, and United Kingdom, several groups of investigators have called for public education and early intervention to prevent the acquisition of disordered eating behaviours and to promote healthy weight regulation practices starting in early adolescence (Striegel-Moore et al., 1986). The findings in the study show that eating disturbances will become an important public health concern, not only among young white South African females, but also among (previously thought of as low risk group) young black South African females. The findings of the



relatively high prevalence of eating disturbances among black South African women is surprising. It gives credence to the transcultural theory proposed by DiNicola (1990) which maintains that eating disorders should be viewed in terms of culture-change and culture reactive syndromes (as distinct from culture-bound) whose onset may be triggered under conditions of socio-cultural flux. South African black women in particular are placed in a situation involving a juxtaposition of two very different cultures, which may cause confusion and stress. This in turn may make them more susceptible to the development of eating disturbances, a process which has often been linked to confusion regarding the individual's sense of self (Bruch, 1973).

This has further implications for health care workers who should be careful not to ignore the presence of eating disorders and disturbances in a population thought to be immune - with the possible increasing incidence delay in diagnosing may also present with the danger of subsequent poor prognosis (Bryant-Waugh & Lask, 1991). Furthermore, these findings strongly emphasise the need for primary and secondary intervention. Preventative programmes focusing on the potential dangers of eating disturbances should be devised and implemented at school level and specialised treatment clinics established on university campuses.

#### **4.5.1 IMPLICATIONS FOR FURTHER RESEARCH**

Further research in the field of eating disorders should involve presenting visual stimuli in a variety of different body shapes and weights (in both the female and male form) to nonclinical samples (such as university students) of black, white and Indian subjects to assess whether there are any differences in ratings of attractiveness across both gender and racial lines. Research should also be conducted on clinical samples to assess whether

the presentation of formal eating disorders is the same in patients of different racial groups.

#### 4.6 CONCLUSION AND SUMMARY

Prevalence statistics of (possible) eating disorders identified in this study are: 13% white females; 7% black females; 3% Indian females; 2% white males; 1% black males and 0% Indian males (Fairburn & Beglin, 1990; Connors & Johnson, 1987; Wolchik & Braver, 1984).

Females from all race groups scored consistently higher on all scales assessed than their male counterparts (Carlat & Camargo, 1991; Schneider & Agras, 1987). In a socio-cultural milieu where female attractiveness is synonymous with thinness women are constantly attempting to limit their food intake and are striving to be thinner (Drewnowski et al., 1994; Huon, 1994). Males are generally not subject to the same social pressure for thinness as their female counterparts. Specifically, a higher percentage of white females than other groups obtained pathological scores on all scales assessed. A predictive model identified the white female student who is most at risk for a development of an eating problem to be urban raised, of average weight but who has exaggerated weight perceptions and a desire to lose at least 10 kilograms (Huon, 1994; Killen et al., 1994; Kishuck et al., 1992).

The Indian male and female sample exhibited the overall healthiest eating behaviours and attitudes, relative to the other two racial groups (Grey, 1995; Lucero et al., 1992). It should be noted, however, that Indian males obtained mean scores which were similar in magnitude to those of white males.

A surprising find was that black males obtained higher mean scores on all scales than white males (Grey, 1995; Sherwood, 1994). An overall higher BMI in black males may in part account for this finding.

The relatively high percentage scores and high mean scores obtained by black female students in this study identifies a disturbing prevalence of disordered eating behaviour and attitudes (Grey, 1995; Haynes, 1995; Sherwood, 1994; Winship, 1996). Significant predictors that emerged identified the black female who is urbanised and who comes from the upper socio-economic strata to be more at risk for a development of an eating problem (Haynes, 1996; Silber, 1986). Complexities involved in the process of westernisation and the concomitant erosion of traditional values and norms are suggested as cardinal contributors to these findings (Abrams et al., 1992; Furnham & Baguma, 1994; Lee, 1993; Winship, 1996).

The university environment with its academic and social pressures was also acknowledged as a possible precipitator of eating disturbances for all samples (Hart & Ollendick, 1985; Striegel-Moore et al., 1989).

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APPENDIX A

Demographic/Biographic/Weight Information Questionnaire

This research study investigates students' eating habits. You need not give your name and may therefore remain anonymous. Please answer each question honestly.

Thank you for your cooperation.

University: \_\_\_\_\_  
\_\_\_\_\_

DEMOGRAPHIC QUESTIONNAIRE

Please CIRCLE the appropriate letter or FILL IN the necessary information.

1. What is your sex?  
  
Male:   a                      Female:   b
2. Are you:  
  
married:   a                      single:   b                      divorced:   c                      widowed:   d ?
3. How old are you? \_\_\_\_\_
4. Where were you mainly raised?  
  
Rural area/farming area?   a                      urban/city region?   b
5. Father's occupation? \_\_\_\_\_  
Mother's occupation? \_\_\_\_\_
6. What is your current living arrangement?  
  
University residence                      a  
Commune/digs                              b  
On my own                                  c  
With partner/spouse                      d  
Family home                                e  
Other (please specify)                      \_\_\_\_\_
7. Year of study? \_\_\_\_\_
8. What is your present weight (approximately)? \_\_\_\_\_
9. What is your present height (approximately)? \_\_\_\_\_

## APPENDIX A (continued)

10. What do you think was the MOST you ever weighed? \_\_\_\_\_  
How old were you? \_\_\_\_\_
11. What do you think was the LEAST you ever weighed at your present height? \_\_\_\_\_
12. Do you consider yourself to be presently:
- |                      |   |
|----------------------|---|
| very overweight      | a |
| slightly overweight  | b |
| average              | c |
| slightly underweight | d |
| very underweight     | e |
13. What would you consider to be your ideal weight? \_\_\_\_\_
14. If female, is your menstrual cycle regular?
- Yes    a                      No    b
- Please elaborate if necessary \_\_\_\_\_
15. Have you had any serious eating difficulty?
- Yes    a                      No    b
- If yes, please specify the nature of your difficulty \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
16. Have you received any treatment for an eating disorder? \_\_\_\_\_
17. If you are prepared to be interviewed please provide a contact address and/or telephone number.  
All interviews will be strictly confidential.
- Name:** \_\_\_\_\_
- Address:** \_\_\_\_\_
- \_\_\_\_\_
- Telephone No:** \_\_\_\_\_

## APPENDIX B

### The Eating Attitude Test (EAT)

Please place an (X) under the column which applies best to each of the numbered statements.

ALWAYS	VERY OFTEN	OFTEN	SOMETIMES	RARELY	NEVER	
						1 Like eating with other people.
						2 Prepare foods for others but do not eat when I cook.
						3 Become anxious prior to eating.
						4 Am terrified about being overweight.
						5 Avoid eating when I am hungry.
						6 Find myself preoccupied with food.
						7 Have gone on eating binges where I feel that I
						may not be able to stop.
						8 Cut my food into small pieces.
						9 Aware of the calorie content of foods that I eat.
						10 Particularly avoid foods with a high carbohydrate
						content (e.g. bread, potatoes, rice, etc.)
						11 Feel bloated after meals.
						12 Feel that others would prefer if I ate more.
						13 Vomit after I have eaten.
						14 Feel extremely guilty after eating.
						15 Am preoccupied with a desire to be thinner.
						16 Exercise strenuously to burn off calories.
						17 Weigh myself several times a day.
						18 Like my clothes to fit tightly.
						19 Enjoy eating meat.
						20 Wake up early in the morning.
						21 Eat the same foods day after day.
						22 Think about burning up calories when I exercise.
						23 Have regular menstrual periods (female).
						24 Other people think that I am too thin.

APPENDIX B (continued)

ALWAYS	VERY OFTEN	OFTEN	SOMETIMES	RARELY	NEVER	
						25 Am preoccupied with the thought of having fat on my body
						26 Take longer than others to eat my meals.
						27 Enjoy eating at restaurants.
						28 Take laxatives.
						29 Avoid foods with sugar in them.
						30 Eat diet foods.
						31 Feel that food controls my life.
						32 Display self control around food.
						33 Feel that others pressure me to eat.
						34 Give too much time and thought to food.
						35 Suffer from constipation.
						36 Feel uncomfortable after eating sweets.
						37 Engage in dieting behaviour.
						38 Like my stomach to be empty.
						39 Enjoy trying new rich foods.
						40 Have the impulse to vomit after meals.

## APPENDIX C

## THE BULIMIC INVESTIGATORY TEST (BITE)

- 5 -

PLEASE CIRCLE "Yes" or "No", or TICK ☐ the appropriate ☐

1. Do you have a regular daily eating pattern? YES NO
2. Are you a strict dieter? YES NO
3. Do you feel a failure if you break your diet once? YES NO
4. Do you count the calories of everything you eat, even when not on a diet? YES NO
5. Do you ever fast for a whole day? YES NO
6. ... If yes, how often do you fast?

EVERY SECOND DAY ☐2 - 3 TIMES A WEEK ☐ONCE A WEEK ☐NOW AND THEN ☐HAVE ONCE ☐

7. Do you do or take any of the following to help you lose weight?

	Never	Occasionally	Once a Week	2-3 Times a Week	Daily	2 - 3 Times a day	5 + Times a Day
TAKE DIET PILLS							
TAKE DIURETICS (medication/ sub- stance which increases the amount of urine excreted)							
TAKE LAXATIVES (medication/sub- stance which promotes purging/ helps stomach to work)							
MAKE YOURSELF VOMIT							

8. Does your pattern of eating severely disrupt your life? YES NO
9. Would you say that food dominates your life? YES NO
10. Do you ever eat and eat until you are stopped by physical discomfort? YES NO
11. Are there times when all you can think about is food? YES NO
12. Do you eat sensibly in front of others and make up in private? YES NO
13. Can you always stop eating when you want to? YES NO

- |     |   |     |    |
|-----|---|-----|----|
| 14. | Do you ever experience <i>overpowering</i> urges to eat and eat?                        | YES | NO |
| 15. | When you are feeling anxious do you tend to eat a lot?                                  | YES | NO |
| 16. | Does the thought of becoming fat <i>terrify</i> you?                                    | YES | NO |
| 17. | Do you ever eat large amounts of food rapidly (not a meal, i.e. a binge* [see page 6])? | YES | NO |
| 18. | Are you ashamed of your eating habits?  | YES | NO |
| 19. | Do you worry that you have no control over how much you eat?                            | YES | NO |
| 20. | Do you turn to food for comfort?  | YES | NO |
| 21. | Are you able to leave food on the plate at the end of a meal?                           | YES | NO |
| 22. | Do you deceive other people about how much you eat?                                     | YES | NO |
| 23. | Does how hungry you feel determine how much you eat?                                    | YES | NO |
| 24. | Do you <u>ever binge*</u> [see below] on large amounts of food?                         | YES | NO |
| 25. | ... If yes, do such binges leave you feeling miserable?                                 | YES | NO |
| 26. | If you do binge* [see below], is this only when you are alone?                          | YES | NO |
| 27. | If you do <u>binge*</u> [see below], how <u>often</u> is this?                          | YES | NO |
|     | HARDLY EVERY <input type="checkbox"/> ONCE A MONTH <input type="checkbox"/>             |     |    |
|     | ONCE A WEEK <input type="checkbox"/> 2 - 3 TIMES A WEEK <input type="checkbox"/>        |     |    |
|     | DAILY <input type="checkbox"/> 2 - 3 TIMES A DAY <input type="checkbox"/>               |     |    |
| 28. | Would you go to great lengths to satisfy an urge to binge* [see below]?                 | YES | NO |
| 29. | If you overeat do you feel very guilty?   | YES | NO |
| 30. | Do you ever eat in secret?  | YES | NO |
| 31. | Are your eating habits what you would consider to be normal?                            | YES | NO |
| 32. | Would you consider yourself to be a compulsive eater?                                   | YES | NO |
| 33. | Does your weight fluctuate by more than 5 pounds/± 3 kilos in a week?                   | YES | NO |

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\*binge: rapid consumption of large amounts of food in a discrete time period (i.e. eating 5 000 calories or more/double the amount a normal adult would consume in less than a two hour time period.)



**EAT - 40 FACTOR STRUCTURE**

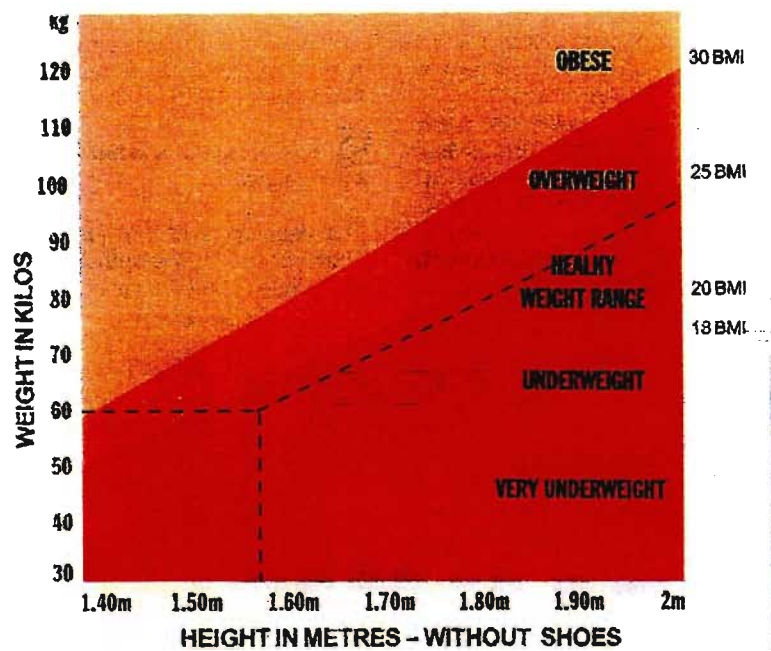
Item Number	Item Content
<b>FACTOR 1: <u>Dieting</u></b>	
37	Engage in dieting behaviour
30	Eat diet foods
36	Feel uncomfortable after eating sweets
39	Enjoy trying new rich foods
29	Avoid foods with sugar in them
10	Particularly avoid foods with high carbohydrate content
15	Am preoccupied with a desire to be thinner
38	Like my stomach to be empty
22	Think about burning up calories when I exercise
14	Feel extremely guilty after eating
4	Am terrified about being overweight
25	Am preoccupied with the thought of having fat on my body
9	Aware of the calorie content of foods that I eat
<b>FACTOR II: <u>Bulimia and Food Preoccupation</u></b>	
40	Have the impulse to vomit after meals
13	Vomit after I have eaten
7	Have gone on eating binges where I feel that I may not be able to stop
34	Give too much time and thought to food
6	Find myself preoccupied with food
31	Feel that food controls my life

**APPENDIX E**

The Body Mass Index was used in this study to determine each subject's weight relative to their height. The BMI of each subject was calculated by dividing weight (in kilograms) by the square of height (in metres).

The BMI identifies three broad ranges of weight: underweight, average or overweight and gives a list of indices ranging from 19 to 40 which are categorised in the following way:

- BMI of 19 or lower is underweight
- BMI of 20 - 25 is average weight
- BMI of 25 - 30 is overweight
- BMI of 31 or more is obese



## **APPENDIX F**

### **DISCREPANCIES BETWEEN MEAN AND PERCENTAGE SCORES**

Any discrepancy in results between mean scores (based on raw scores) and frequency (percentage) scores are due to the differing range of measures and sensitivities of these two statistical procedures.

The mean score takes into account the entire range of test performance (all sample values) from entirely healthy scores to severely pathological scores and gives an average; the value of each specific score is taken into account. The mean is therefore sensitive to extreme measurements when these measurements are not balanced on both sides.

The percentage score which is based on a categorised score, reflects test performance falling within a wide range of score categories; a score range from 0-9 is categorised as normal; a score range from 20-30 is highly pathological (on the Symptom subscale). Similarly, on the total scales a gross categorisation of 30 or more points on the EAT, or, 25 or more points on the BITE denote pathology. The percentage score is therefore robust in the sense that all those subjects whose scores fall within the designated category are treated equally; it does not distinguish between a subject who obtains a score of zero from a subject who obtains a score of 9 points, both subjects are categorised as normal on the Symptom subscale. In a similar vein, a subject who obtains a score of 30 points is not distinguished from a subject who obtains a score of 38 points, both fall into the category of pathology on the EAT scale.

It is common therefore, for some discrepancies in results based on mean scores and those based on frequencies (percentages) to occur.

APPENDIX F Contd ...

In the case of black and white females, a closer observation of the pattern mean scores in the research will indicate that where this discrepancy does occur, the order of mean scores is generally not significant. For example, on the EAT scale the mean scores of black and white females is  $\bar{x}$ =20,48 and  $\bar{x}$ = 19,05 respectively. The difference between the means of the two groups is not significant ( $F=1,73$ ;  $df=1,666$ ;  $P >0,05$ ). Indeed, when the 'sometimes' category is taken into account the order is reversed with white females obtaining a higher mean score than black females ( $\bar{x}$ =107,20 and  $\bar{x}$ =104,54 respectively).

In view of the consistently higher percentages of white females in the score categories reflecting pathology, compared to females in other race groups (and specifically to black females) the researcher has focused on the pattern of scores based on frequencies.

Percentages of females in each race group who have obtained scores which are categorised as pathological on the following scales and subscales ( $\geq 30$ points on the EAT; $\geq 25$ points on the BITE; $\geq 20$ points on the Symptom; and $\geq 10$ points on the Severity).			
	FEMALES		
	WHITE %	BLACK %	INDIAN %
EAT TOTAL AND BITE TOTAL	13	7	3
EAT TOTAL AND/OR SYMPTOM AND/OR SEVERITY	11	5	2
EAT TOTAL	19	17	9
BITE TOTAL	13	8	3
BITE SYMPTOM	11	3	2
BITE SEVERITY	9	8	2
<b>Note:</b> The percentage of white females who obtained pathological scores is higher than the percentage of black females in each case.			

In addition to the above summary of results, also refer to the bar graphs provided in the text, which clearly reflect a constant trend in the performance positions on the EAT and BITE scale of female and male subjects in each race group (refer to Chapter 3 for Figures 3.1, 3.5, 3.6, 3.7 and 3.8).