Eating behaviours and body shape concerns in first year university students

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EATING BEHAVIOURS AND BODY SHAPE CONCERNS IN
FIRST YEAR UNIVERSITY STUDENTS.

A thesis submitted in partial fulfilment of the
requirement for the award of the degree of

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by

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ABSTRACT

The aim of this study was to investigate the eating behaviours and body shape concerns of undergraduate university students. It was anticipated the results would provide an indication of the prevalence of anorexia and bulimia and determine the degree to which university students exhibit behavioural and attitudinal characteristics of the clinical disorders. Questionnaires were posted to 1367 first year university students, of which 511 were returned (37 percent response rate). The survey contained questions pertaining to demographic data and included the Eating Attitudes Test (EAT) and the Body Shape Questionnaire (BSQ). The EAT is a 40-item, self-report questionnaire which evaluates behaviours and attitudes symptomatic of anorexia nervosa. A total score of 30 or greater indicates a predicted case of clinical anorexia. The BSQ is a 34-item, self-report questionnaire which measures concerns about body shape characteristic of bulimia nervosa. A cut-off score of 140 or greater was deemed predictive of clinical bulimia. Both questionnaires have been previously validated (Garner and Garfinkel, 1979, Cooper et al. 1987). Neither questionnaire allows for a formal clinical diagnosis of an eating disorder to be made. The sample was under-represented by males, students from non-English speaking backgrounds, and students from Commerce, Engineering, and Law faculties. The most frequent bulimic attitude on the BSQ for females was a fear of weight gain and the most frequent bulimic behaviour was exercising, followed by dieting, due to concerns about body shape. Responses to the bulimic extreme for bingeing, laxative use, and vomiting were very low, with the majority of sample females responding in the normal behaviour range for these items. Eight percent of females scored 140 or greater on the BSQ,
indicating possible cases of clinical bulimia. Six percent of females and 0.52 percent of males scored 30 or above on the EAT, indicating possible cases of clinical anorexia. Females reported a greater frequency of abnormal eating behaviours and had a higher mean EAT score than males (13.6 compared to 8.5). The difference was statistically significant ($t = 6.4, p < 0.001$). Female responses on the EAT were comparable to female responses on the BSQ with the most frequent attitude in the anorexic direction being terrified of weight gain and the most frequent behaviour was dieting, followed by exercise. Behaviours such as laxative use, vomiting, and bingeing were reported less frequently. No statistically significant relationship was observed between eating behaviours and attitudes and ethnicity or faculty in which the respondent studied. However, responses for both variables highlighted the consistency between EAT and BSQ. The relationship observed between eating attitudes and behaviours discussed above was confirmed by analysis which showed a positive correlation between total EAT and total BSQ scores ($r = 0.6, p < 0.05$). Thus, as body shape concerns increase so do reports of abnormal eating behaviours. In general, these results support previous research on eating disorders in university students. The only discrepancy with past studies is in the prevalence rates of predicted cases of anorexia, and in behaviours such as binge eating, vomiting, and laxative use. In both cases, the prevalence rates in this study sample are lower than in other university study samples. This, perhaps, implies that students at Wollongong University do not exhibit these behaviours to the same extent as students at other universities.
INTRODUCTION

Anorexia nervosa and bulimia nervosa are two psychiatric disorders which, to most in society, commands a great deal of understanding. The expansive volume of literature on eating disorders has attempted to unravel the causes, and motivation behind the maintenance of these disorders which ravage the mind and body. Examining the prevalence of the disorders themselves and also behaviours and attitudes characteristic of these disorders, provides an insight into the situations and attitudes which may be significant in the development of an eating disorder.

Historically, cases of eating disorders have been documented as far back as the 13th century (White, 1991). With changing attitudes over time towards body size and shape, and technological developments which emphasise physical perfection, it is not surprising to see an increase in behaviours which attempt to control weight so that ultimately, the individual can conform to the fashionable ideal figure. These behaviours include dieting, fasting, taking slimming tablets, vomiting after eating, taking laxatives, diuretics, or enemas, and exercising strenuously. The ideal figure has changed a great deal from the days when being overweight meant good health and prosperity (White, 1991) to the present day where the ideal male body is fit and muscular and the ideal female body changes from fit and toned to shapeless and waif-like. It has been suggested that the media, fashion and advertising industries must take a great deal of the responsibility for the increase in disordered eating behaviours (White, 1991, O'Dea, 1995). It is their portrayal of the female form, in particular, which may cause females to feel insecure and unaccepting of their own bodies.
To a lesser extent, the medical establishment has also begun sending out messages about being an ideal weight and watching what you eat in order to prevent obesity and morbidity (O’Dea, 1995). The problem is that some women and men have a distorted view of what they want their ideal weight to be and become obsessive about what they eat. Coupled with various other psychological and social causes, the consequences can be life-threatening.

There are specific groups in the community more at risk of developing an eating disorder. These groups possess certain physiological or social traits which make them especially vulnerable. Adolescents are a vulnerable group because of the marked physical changes both males and females go through during puberty. In particular, females grow in their hips and increase fat deposits on their upper legs, breasts and hips (Abraham and Llewellyn-Jones, 1992) for fertility reasons. Many females dislike their new figure and, hence, this creates the beginning of the struggle, between the mind and the body, to be thin. Western cultures have a higher prevalence of eating disorders suggested to be because of the greater importance that is placed on being slim. This can be attributed to the greater influence of industries such as fashion and advertising, portrayed through the media, which is a dominant feature of industrialised countries. Finally, females are a particularly vulnerable group because they are more often the main target of media images which emphasise slimness, success, and beauty as equating with each other.

In the last twenty years, the prevalence of eating disorders has reportedly increased. The groups most at risk in the population, discussed in part above, are documented to be females, adolescents, high school and university students and western cultures. More
recently, researchers have suggested the increase is actually due to the increase in
behaviours and attitudes symptomatic of eating disorders without the accompanying
psychological disturbance (Striegel-Moore et al. 1988, King 1989, Bunnell et al. 1990,
Bunnell et al. 1992). The diagnostic manual (DSM-IV), published by the American
Psychiatric Association (1994), classifies the disorders into anorexia nervosa, bulimia
nervosa, and eating disorders not otherwise specified. This last category accounts for
individuals who display many, but not all, of the physical criteria of an eating disorder and
do not have a psychological disturbance. These disorders are known as sub-clinical forms
of an eating disorder. It is important to identify these individuals as they still experience a
significant amount of emotional distress and can cause themselves physical harm (Bunnell
et al. 1990). The present study is significant in that it addresses eating behaviours and body
shape concerns in a group which has been found to be at increased risk of developing an
eating disorder and who are more likely to report behaviours and attitudes characteristic of
an eating disorder in the absence of the associated psychopathy (Psot and Crowther, 1985,
Johnston and Christopher, 1991). The study is concerned with first year university students
of whom most are in the “at risk” sub-groups, namely females and adolescents studying
within a western culture.
CHAPTER ONE

Aims and Objectives

1.1 Aim

This project is concerned with the eating attitudes and body shape concerns of first year students enrolled at the University of Wollongong. The aim of the study is to investigate the eating behaviours and the attitudinal dimensions of body image, or body shape concerns, of university students using self-reported data derived from the Eating Attitudes Test (EAT) and the Body Shape Questionnaire (BSQ). These instruments have been previously developed and validated (Garner and Garfinkel, 1979, Cooper et al. 1987).

The prevalence of eating disorders has increased significantly in the last two decades (Bordo, 1988, White, 1991). Eating disorders and their subclinical forms are known to be particularly prevalent among adolescents, especially amongst females. Research has also documented the reputed widespread occurrence of eating disorders and their symptomatic behaviours within university populations (Hesse-Biber, 1989, Striegel-Moore et al. 1989).

The study will be a limited investigation of the frequency with which participants report symptoms paralleling those of a clinically diagnosed eating disorder. The ability to distinguish between clinical forms of the disorders and the presentation of symptomatic behaviours which can exist in the absence of psychosis is important to the study of eating disorders. The presence of one or more of the physical criteria in the absence of the
associated psychopathy may indicate a subclinical form of an eating disorder. Further research into the prevalence of subclinical forms of eating disorders, and the prevalence of disordered eating behaviours and attitudes, is warranted. Establishing this distinction could have implications for treatment of the disorders themselves and for preventative educational activities focussed on the associated eating behaviours, practices, and concerns of individuals. Fabian and Thompson (1989) report that the relationship between body image variables, in this case body shape, and eating disturbances has not been fully examined. These researchers further report that the connection between these two variables has been well documented in adults but little research has been carried out on adolescents.

A formal clinical diagnosis of an eating disorder is beyond the aims of this study and also a limitation of the self-report questionnaire used. The questionnaires only permit the identification of subjects whose answers to the questions about eating behaviours and body shape concerns suggest disordered behaviours. Thus, the instruments may only indicate the presence of bulimia nervosa or anorexia nervosa. This study will contribute to the increased understanding of eating disorders.
1.2 Objectives

(i) to examine the level of concern about body shape in female university students (BSQ scores),

(ii) to determine the occurrence of particular body shape concerns (BSQ items) in sample females,

(iii) to determine the occurrence of particular abnormal eating behaviours (EAT items) in sample males and females,

(iv) to examine the differences between the sexes in the level of disordered eating behaviours and attitudes (EAT scores),

(v) to investigate the eating behaviours and body shape concerns of respondents across faculties within the University (EAT and BSQ scores),

(vi) to determine if there are differences between ethnic or cultural groups with body shape concerns and pathogenic eating attitudes and behaviours (EAT and BSQ scores for females, EAT scores for males),
(vii) to determine the extent to which a high level of concern about body shape (BSQ scores) correlates with reported dieting and disordered eating behaviours (EAT scores),

(viii) to determine the extent to which the results of this study are consistent with past research which has used the same measurement tools.
Research in the field of eating disorders is extensive and continued research is important. Anorexia nervosa and bulimia nervosa are increasing in prevalence (Kalucy, 1983, Dolan, 1991) for various psychological, environmental and sociocultural reasons. It is suggested by some researchers that eating disorders appear to be reaching epidemic proportions in western society, more significantly among adolescent girls and women than among adolescent boys.

2.1 Clinical and subclinical forms of eating disorders

Researchers have often identified differences between the clinical syndrome and subclinical forms, or the partial syndrome, of eating disorders (Clarke and Palmer, 1983, King, 1989, Bunnell et al. 1990, Bunnell et al. 1992). It is hypothesised that the recent increase in eating disorders could be due to a lack of distinction between the clinical syndrome and the associated symptomatic behaviours (Striegel-Moore et al. 1989, Bunnell et al. 1990). This distinction creates important implications for diagnosis and treatment of eating disorders and research topic areas. The subclinical forms refer to the presence of behaviours and attitudes symptomatic of the eating disorder with an absence of a psychological disturbance and one or more of the criteria from the DSM-IV that are either not met, or do not occur in the frequency and duration required for a clinical diagnosis. A formal clinical diagnosis of
an eating disorder involves a diagnostic interview following a format based on the DSM-IV.

The criteria for clinical diagnosis of anorexia nervosa and bulimia nervosa, published by the American Psychiatric Association (see Appendix Four), are accepted world-wide (Bunnell et al. 1990 and Zeman, 1991), yet often reported to be inconsistently applied and inadequate (Striegel-Moore, 1989, Bunnell et al. 1990). Levey and colleagues (1989) report that the DSM-IV embodies the view that anorexia nervosa and bulimia nervosa are largely independent conditions, a view which is not universally shared. The DSM-IV provides a useful framework to define the problems but a closer examination of the differences among groups exhibiting anorexic or bulimic behaviours is needed. The differences that can be observed between groups is highlighted by the findings of Bunnell and colleagues (1990), mentioned previously, in which patients with subclinical anorexia nervosa showed levels of psychological disturbance comparable to patients with a definite diagnosis of anorexia. In contrast, patients with subclinical bulimia nervosa did not resemble the psychopathology of those with a definite diagnosis of bulimia. In addition, differences can exist regarding the frequency and duration of behaviours symptomatic of the respective eating disorders reported by patients.

Patients with subclinical forms of eating disorders do not meet all the criteria for a clinical diagnosis may still experience a significant amount of emotional distress (Bunnell et al. 1990) and can cause themselves physical harm. For these reasons it is important to differentiate non-clinical categories of eating disorders. Cases of this nature would be
classified as "Eating Disorders Not Otherwise Specified" under the DSM-IV diagnosis (White, 1991). Suggested criteria which groups these disordered eating practices and behaviours together is the absence of an associated psychosis, the display of behaviours with the potential to cause significant distress and physical harm, and the increased risk for the development of a clinical syndrome of bulimia nervosa or anorexia nervosa (Rosen et al. 1988, Cantrell and Ellis, 1991). The presence of symptomatic behaviour in the absence of psychological characteristics has contributed to the need to expand the categories under the umbrella of eating disorders. Hesse-Biber (1989), for example, found in a study on eating patterns and disorders in a college population that the eating problems experienced by the participants only partially resembled clinical eating disorders, ie. they exhibited behavioural symptoms associated with anorexia and bulimia, but most displayed the absence of psychological traits also associated with the disorders. Expanding the categories under eating disorders could have significant implications. Firstly in identifying true cases, thus true prevalence rates, of the clinical syndrome as opposed to cases which do not meet the full criteria, and secondly, for public health initiatives in targeting groups for preventative education.

2.2 Prevalence rates of anorexia and bulimia

There are a number of studies which document the prevalence rates of eating disorders. Most of the prevalence studies have been conducted on white, “Western” populations (Dolan and Ford, 1991, McCallum, 1993) and report the prevalence of anorexia nervosa to be approximately between one and two percent (Maloney et al. 1989, McCallum, 1993,
American Psychiatric Association, 1994). Research has been inconsistent in the past when reporting the prevalence rate of bulimia nervosa. Its prevalence has been documented to range from two to four percent (Striegel-Moore et al. 1989, Welch and Hall, 1990, McCallum, 1993, American Psychiatric Association, 1994) and up to seven and eight percent (Post and Crowther, 1985, Leon et al. 1989, Fabian and Thompson, 1989) with one study reporting it to be as high as 15 percent (Maloney et al. 1989). This last prevalence study was conducted on a sample of college students. The high prevalence rate is not generalisable to the general population as college or university samples are not considered a "normal" group because, for one reason, there is a reputed high prevalence in this population and within the university environment. This will be discussed more further on in the report.

Reasons for this apparent inconsistency in findings are reported to be attributed to discrepancies in sampling, such as over- or under-representation of groups, lack of or poorly defined diagnostic criteria leading to inadequate distinction between clinical and subclinical eating disorders, inconsistent frequency criteria for certain behaviours, such as bingeing, purging, and laxative abuse (Striegel-Moore et al. 1989, Bunnell et al. 1990), and poor validity and reliability of measurement tools (Shaw and Garfinkel, 1990). Levey et al. (1989) offer the suggestion that the lack of consensus in defining the syndrome makes measurement and assessment less than satisfactory.

Because of the fact that women are diagnosed with bulimia nervosa and anorexia nervosa around ten times more often than men (White, 1991), sample populations in research, and
results on which conclusions are based, are often most generalisable to the female population. The prevalence of bulimia nervosa in males is consistently reported to be much lower. McCallum (1993) reports this rate to be approximately 0.2 percent. Statistics estimate the male to female ratio for anorexia, and also bulimia, to be between 1 in 10 and 1 in 20 (King, 1989, Cantrell and Ellis, 1991). Consequently, most studies exclude male subjects altogether (Cantrell and Ellis, 1991) or include them initially but subsequently exclude them from further research for failure to score abnormally on screening questionnaires (Clarke and Palmer, 1983, Hesse-Biber and Marino, 1989). However, although at much lower rates, the male population has been diagnosed with eating disorders and has also been found to display particular pathogenic eating behaviours at levels similar to females. The study which reported this finding (Whitaker et al. 1989) surveyed 5108 high school students in the 9th - 12th grade to investigate eating behaviours and depressive and anxiety symptoms. The results were somewhat unexpected by the researchers. There were no sex differences in the severity of weight control efforts, similar proportions of boys and girls reported the use of purging or diet pills for weight control, more boys than girls used diuretics, and boys were more likely than girls to report large or recurrent binges. The students were all non-referred, predominantly white, middle class and Catholic or Protestant. The sample did not, however, include high school dropouts or students from city schools and this limits the extent to which the results can be generalisable. This study is notable in the fact that males were shown to report disordered eating behaviours which previous research limited to only being found at significant levels in female populations. Importantly though, the consequences of the clinical disorder and disordered eating behaviours are the same in both males and females. Clinical evidence has shown that there
appears to be no difference in symptoms and course of anorexia and bulimia between the sexes (King, 1989, Cantrell and Ellis, 1991). Excluding males from research into eating disorders can confound the evidence and does not provide the full picture, rendering the expansive volume of literature on eating disorders incomplete.

2.2.1 Trends in the prevalence of eating disorders

Cases of anorexia nervosa and bulimia nervosa, clinically diagnosed by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), have increased in incidence significantly in the past twenty to thirty years (White, 1991). The literature suggests that eating disorders are approaching epidemic proportions (Kalucy, 1983 and Dolan, 1991). Given the rates discussed above, it seems that eating disorders, although concerning for those individuals who are clinically diagnosed, are hardly at the stage of an epidemic. It has been reported that earlier prevalence studies were methodologically inadequate and therefore reported high rates of bulimia nervosa and anorexia nervosa which may have suggested that eating disorders were becoming an epidemic (Bushnell et al. 1990). There are studies which support this further. Whitaker et al. (1989) found that very small proportions of subjects met criteria for eating disorders. An interesting explanation for claims overstating the prevalence of eating disorders is offered by Patton and King (1991). They report a study in the late 1970’s which demonstrated that the increased number of new cases could be accounted for by demographic changes in the general population, particularly by the relative increase in the numbers of young women. Whilst the prevalence of anorexia nervosa and bulimia nervosa are reported to be increasing, it may be more apt to hypothesise that it is the symptoms of eating disorders, or disordered eating behaviours
rather than the clinical disorders, that are reaching epidemic proportions. The percentage of people, in particular women, who display one or more behaviours symptomatic of an eating disorder is far greater, and thus, of a greater concern, than eating disorders themselves. Many studies document a high prevalence of abnormal eating behaviours and attitudes such as binge eating, fasting, dieting, self-induced vomiting, laxative abuse, and subjects describing themselves as fat or dissatisfied with their body shape (Crawford and Worsley, 1988, Fabian and Thompson, 1989, Leon et al. 1989, Maloney et al. 1989, Striegel-Moore et al. 1989). Prevalence studies indicate that one-third to over one-half of the adult population had either dieted, fasted or taken slimming tablets (Worsley and Crawford, 1985, Crawford and Worsley, 1988). Dieting prevalence is reported to be as high as two-thirds in the adolescent population (Leon et al. 1989, Rosen et al. 1990). These pathogenic behaviours and attitudes appear to be endemic to the Western population (Dolan and Ford, 1991). Historically, cases displaying symptoms of anorexia and bulimia have been documented as far back as the 13th century (White, 1991) and the 17th century (Parry-Jones and Parry-Jones, 1991) respectively.

2.2.2 Gender differences in prevalence

One of the most conclusive facts to emerge from the significant amount of research conducted into eating disorders is that more women than men are clinically diagnosed or display disordered eating behaviours (Abraham et al. 1983, Rosen et al. 1988, White, 1991). There is extensive documentation of the gender differences in eating and weight concerns and in the occurrence of the disorders themselves. Common theories to explain this are thought to be the social pressures on women to be slim (Tiggemann, 1994),
adolescent females resisting the onset of puberty and the physical changes that take place, such as greater deposition of fat on the hips and thighs and an increase in breast size, which challenge a woman's body image (Abraham et al. 1983), and the perceived relationship between gender roles and eating behaviours (Cantrell and Ellis, 1991) such that females are expected to consume much smaller quantities of food than males.

Smead and Richert (1990) found that there appeared to be an important sex difference in the organisation of information about food and eating among normal controls. Males seem to eat for the immediate sensory pleasure and to satisfy feelings of hunger. Females employ a more cautious and controlled view of food and eating and review the consequences of eating a certain food before it is actually eaten. The differences between the sexes is also apparent in the priorities of adolescent life. Adolescent females are reported to worry most about their figure, weight, popularity and relationships with the opposite sex, whereas adolescent boys are concerned most with money, looks, and relationships with the opposite sex (Hoberman and Kroll-Mensing, 1992).

Both males and females have shown to have distorted body images and concerns about their shape. Males tend to have a desire to be big and, presumably, more muscular, thus perceiving themselves as too thin. Females have the desire to be slim and perceive themselves to be overweight, thus seeking ideal weights well below recommended weight-for-heights (O’Dea, 1995). These gender differences and demands placed on the sexes due to sex role stereotyping (Bar-tal and Saxe, 1976, Paxton and Sculthorpe, 1991) could be a factor in the way the sexes organise food and eating information and experiences. Females
are thought to be more vulnerable to having a poor self-esteem. The theory is that attractiveness is important to a woman’s self-image and body weight is central to attractiveness, thus, the role of body concern and dieting practices to improve her overall satisfaction with herself (Tiggemann, 1994). Males, on the other hand, feed their self-esteem from many other sources and body dissatisfaction could be expected to be much less (Paxton et al. 1991, Tiggemann, 1994).

It would appear, due to the greater body dissatisfaction amongst females, that this would be reflected in their eating behaviours and attitudes. Whilst this is a typical finding in most research, a study by Lachenmeyer and Muni-Brander (1988) found no difference between the genders in the rates of behaviours symptomatic of eating disorders. Their study investigated the prevalence of eating disorders across gender and culture in a sample of male and female students. In both groups (high and low socioeconomic) there were no significant gender differences in the rates of bingeing, vomiting, bingeing and vomiting, and the use of laxatives or diuretics. This may have been influenced by the fact that half of the sample were minority students and cross-cultural studies have shown that some cultures traditionally display less concern about body shape (O’Dea, 1995). Another study on male and female high school students (Whitaker et al. 1989) reported that on the whole females were more concerned about overweight and overeating than males and weight control methods were more common in girls. However, there were no sex differences in the severity of effort among those who attempted weight control. Among the dieters (72 percent girls and 31 percent boys) the most weight lost on diets averaged six kilos for boys and five kilos for girls. Similar proportions of male and female students purged or used
diet pills 40 or more times and boys were more likely than girls to report large binges or recurrent binges. This evidence further supports the inclusion of males in research on eating disorders. Whilst prevalence rates may be disproportionate and the motivation for engaging in abnormal eating behaviours may be different between the sexes, the severity of weight control methods when they do occur in males is equal with, and in some cases greater than, females.

2.2.3 Prevalence in University populations

Many studies have been conducted in universities and colleges which aim to investigate the various causes and prevalence of eating disorders and disordered eating behaviours. These investigations have revealed the prevalence of both eating disorders and abnormal eating behaviours to occur at higher rates among college students and young adult women (Post and Crowther, 1985, Hesse-Biber and Marino, 1989, Striegel-Moore et al. 1989, Johnston and Christopher, 1991) than amongst the general population. King (1989) estimates that between three and five percent of female college and university students will exhibit some of the subclinical behavioural and attitudinal symptoms of eating disorders. Explanations for this phenomenon have included the pressures of competition and achievement orientation of university studies (Striegel-Moore, 1990), the uncomfortable transition from high school to college and the subsequent decline in self-esteem (Hesse-Biber and Marino, 1989), and parental pressure for high achievement (McCallum, 1993) and their beliefs and attitudes about a women’s role in society and their intelligence (Silverstein et al. 1988).
Researchers and the general community are particularly concerned about the widespread occurrence of eating disorders amongst college and university students. As many as 20 percent of women who display the subclinical symptomatology are “at risk” of developing a clinical disorder (Cantrell and Ellis, 1991). Hesse-Biber (1989:72) hypothesised that the increase in prevalence rates in universities could mean an increase in the disorders themselves, or that the symptomatic behaviour associated with the disorders, is "spilling over into the otherwise normal population". Similarly, Striegel-Moore and colleagues (1989), acknowledged this perspective in their study of disordered eating among college students. Whilst they did not find a high prevalence rate of bulimia nervosa, a significant number of participants experienced an increase in one or more symptoms of disordered eating during their first year of college.

The prevalence estimates of symptoms of eating disorders such as bingeing, dieting, and purging vary to some extent but remain consistently high. Binge eating prevalence ranges from 23 to 90 percent (Clarke and Palmer, 1983, Hesse-Biber and Marino, 1989, Striegel-Moore, 1989) depending on whether the subject was male or female and their definition of a binge. Purging ranged from two to 22 percent (Lachenmeyer and Muni-Brander, 1988, Fabian and Thompson, 1989, Striegel-Moore, 1989), between one and five percent abuse laxatives (Abraham and Llewellyn-Jones, 1992), and dieting ranged from seven to 94 percent (Abraham et al. 1983, Striegel-Moore, 1989, Hoberman and Kroll-Mensing, 1992) depending on the sex of the subject, age and occupation (eg. student or ballet dancer). Many young women choose one or more of these methods to control their weight. Laxative abuse is reported to be declining due to an awareness by women of their ineffectiveness and
potential danger to health, whereas self-induced vomiting is reportedly on the increase (Abraham and Llewellyn-Jones, 1992).

An accurate representation of eating disorders in college students needs to distinguish between the incidence of the clinical syndrome and the prevalence of various symptomatic behaviours and attitudes of the disorders. The presentation of behavioural symptoms of anorexia and bulimia is hypothesised to exist in populations without the clinically associated psychosis (Hesse-Biber, 1990, Bunnell et al. 1990). The latter research describes this as the main difference between subclinical and formal eating disorders. The results of this study, which included a comparison of the two groups across a number of demographic, eating pathology, and general psychological variables, revealed a clear pattern of difference between the two bulimia nervosa groups, but no clear pattern of difference between the definite and subclinical anorexia nervosa groups. This study only employed a small sample size and this may limit the extent to which the results are generalisable.

An interesting aspect of research into abnormal eating behaviours within the university environment has centred on the prevalence of eating disorders in selected female student populations (Kurtzman et al. 1989), specifically dietetic majors (Drake, 1989, Johnston and Christopher, 1991). Whilst studies into this phenomenon are limited, dietetic majors have been found to practice abnormal eating behaviours, such as vomiting after overeating (Crockett and Littrell, 1985), have a poor perception of body weight and score highly on the 40-item EAT questionnaire compared to a control group of hospitality and clothing majors.
These studies are often supported by anecdotal reports by dietetic tutors which have indicated that many students choose to major in dietetics because of personal experiences with eating disorders or abnormal eating behaviours and preoccupation with food and dieting. However, one study by Johnston and Christopher (1991), involving an assessment of psychological and behavioural traits common to individuals with anorexia nervosa, found no evidence to support the contention that female dietetic majors have high rates of anorexic behaviours. The differences in findings could be attributed to the different application of statistical tests. This latter study did conclude that the students who major in dietetics can be characterised by abnormal eating patterns and attitudes. They do not, however, display symptomatology across all of the factors associated with anorexia nervosa. In this sense, the significance of these findings relates back to research by Hesse-Biber (1989) and Striegel-Moore et al. (1989) who found the prevalence of the disorders themselves among college populations to be vary rare and anorexic behaviours and bulimic behaviours to be much higher than in the general population. Thus it appears that eating disorders and, more specifically, disordered eating behaviours and body shape concerns in university or college students is a particularly important area for continued research, especially in relation to the attitudes and concerns of particular groups within the university population.

**2.2.4 Cultural differences in prevalence and incidence**

The prevalence of eating disorders across cultures is not clearly established. The characteristics and prevalence of eating disorders in people living in developing nations or
who have emigrated to the West have been studied less frequently (King and Bhugra, 1989, Lee, 1991). An example of the few studies which have investigated this issue illustrate why it is suggested that eating disorders are increasing in cultures becoming “westernised”. A study of fourth and fifth year second-generation Asian schoolgirls in Britain revealed a higher than expected prevalence of bulimia (Mumford and Whitehouse, 1988). The predicted cases of bulimia were identified by the BSQ and later confirmed by a formal clinical diagnosis. Another cross-cultural study of schoolgirls in India also found those scoring greater than the cut off on an Eating Attitudes Test to be unexpectedly high at 29 percent (King and Bhugra, 1989). These cases were not followed up by a clinical interview. Eating disorders have often been described as culture-bound syndromes because of the fact that more evidence exists to support their prevalence in Western than non-Western countries. Research, where appropriate, should examine cultural differences in results and attempt to make conclusions if the differences are significant.

Modern dieting and the pursuit of thinness are considered powerful influences within Western culture (Lamb et al. 1993). Researchers have often reported that such behaviours are increasingly prevalent in a society that is considered affluent and industrialised (Hesse-Biber, 1989, Lamb et al. 1993), and which has stereotypic views of the ideal woman consistently portrayed in the media, and in the fashion and advertising industries (Bar-Tal and Saxe, 1976, Paxton and Sculthorpe, 1991), a feature not as predominant and available in non-industrialised societies.
The effect that Western cultures have on eating disorders can perhaps be highlighted by examining the prevalence of eating disorders in other previously non-industrialised countries. Reported prevalence rates in these groups vary considerably, depending on the choice of methodology and the culturally-biased nature of many questionnaires (King and Bhugra, 1989, Patton and King, 1991). Research has documented an increase in eating disorders in cultures that are becoming "westernised" (Mumford and Whitehouse, 1988, Hesse-Biber, 1989, Dolan, 1991) which may be attributed to the adoption of Western attitudes towards body shape, weight and dieting behaviour (Mumford and Whitehouse, 1988). There are studies which support a much lower prevalence of eating disorders in non-industrialised countries and other ethnic groups and cultures living within Western societies (Rosen et al. 1988, Dolan and Ford, 1991, McCallum, 1993). This is seen to be due to the fact that they are subject to different sociocultural influences and may have more of an acceptance within their culture of a larger body size, encompassing that culture's traditional view of body shape. A recent literature review emphasised the effect of Western culture on ethnic groups (O’Dea, 1995). Whilst acknowledging that little research has been done in this area, the studies mentioned above provide some evidence to suggest that affluence and “westernisation” can affect the perception of body image and therefore create a situation where the slim ideal for females and the larger ideal for males is increasingly important and perpetuated amongst different cultural and ethnic groups. Dolan and Ford (1991) report that behaviours such as binge eating and dietary restraint have been shown to exist among many Western populations throughout the world and thus these abnormal behaviours may by considered endemic to these societies.
Several researchers hypothesise that disordered eating exists on a continuum, with anorexia nervosa and bulimia nervosa representing the extreme points (Striegel-Moore et al. 1989, Johnston and Christopher, 1991). The hypothesis was proposed to link milder forms of eating disorders with the more severe forms (Johnson-Sabine et al. 1988). An assessment of factors related to abnormal eating behaviours may assist in determining what causes the progression along the continuum and the subsequent development of a clinical syndrome in some cases (Johnson-Sabine et al. 1988).

On the bulimia continuum (see Figure 2.1) lies unconcern with weight and normal eating, "normative discontent" with weight (Striegel-Moore et al. 1989 and Tiggemann, 1994), restrained eating, and bulimia nervosa. To understand the points on the continuum described above it is necessary to outline some important definitions. The term "normative discontent" is characterised by "dysphoric affective responses to weight, such as feeling out of control, ashamed, and displeased" (Striegel-Moore et al. 1989:500) and general concerns and dissatisfaction with body size and shape (Tiggemann, 1994). Further along the continuum lies restrained eating and dieting, terms often used interchangeably. Characteristics of restrained eating include restriction of certain foods perceived as fattening, kilojoule restriction, and preoccupation with weight and eating. Rand and Kuldau (1991) found restrained eating to occur more in women and men between the ages of 18 and 65 years at a prevalence rate of twenty to thirty percent and ten percent respectively, and to be more likely related to episodes of binge eating. The 18 to 65 year
age group represents the adult population. The lack of distinction between age-groups within the adult population limits the usefulness of this information in understanding those in the population more likely to restrict their food intake.

**Figure 2.1. Points on the bulimia continuum.**

| unconcern with weight/normal eating | "normative discontent" eating | restrained eating | bulimia nervosa |

On the anorexia continuum (see Figure 2.2), lies "anorexic-like behaviour" and anorexia nervosa. The fact that there exists less points on the anorexia continuum compared to the bulimia continuum could be one reason why there was no clear pattern of difference between subclinical and definite anorexia nervosa, whereas a clear pattern was found between subclinical and definite bulimia nervosa in the study done by Bunnell et al. (1990).

**Figure 2.2. Points on the anorexia continuum.**

| "anorexic-like behaviours" | anorexia nervosa |

On the anorexia continuum, "anorexic-like behaviour" is considered as an extreme preoccupation with weight and diet and has a prevalence rate of seven to sixteen percent in university female students (Bunnell et al. 1990, Johnston and Christopher, 1991). Thus, whilst few appear to experience the extreme end of either continuum, most can be found to
be experiencing other points along the continuum. It is not clear what causes progression along the continuum, nor has it been determined that one passes through "stages", as the continuum theory suggests.

2.4 Disordered eating behaviours - a normal phenomenon?

It is evident that disordered eating covers a broad spectrum of behaviours and practices. Many of the behaviours described above are reputedly evident in a large majority of the adolescent and adult female population, and to a much lesser extent in males. Studies suggest that many women at some time in their life, find themselves at a point on either the anorexia or bulimia continuum. It has been suggested, therefore, that many behaviours on the continuum are a part of normal female development (Abraham et al. 1983, White, 1991) and the boundaries between eating pathology and normal dietary practices are unclear (Bunnell et al. 1990). Dieting behaviours and concern about body weight have become such a common feature of Western society that they are considered by some researchers to be normal (Abraham et al. 1983, Kalucy, 1983, White, 1991, Tiggemann, 1994).

The concept of what is normal in relation to eating behaviours and attitudes requires further elaboration. Studies on attitudes towards the body have revealed that many normal controls are dissatisfied with their bodies and want to be thinner (Hsu and Sobkiewicz, 1991). The original studies which document the development of the EAT (Garner and Garfinkel, 1979) and the BSQ (Cooper et al. 1987) both found that the normal control groups overlapped the patient groups in the scores from the questionnaires. Cooper et al. (1987) reports this result
is to be expected using the BSQ due to it measuring a psychological dimension that is known to vary considerably within patient and community sample groups. Previous research has reported uncovering a group of chronic-dieters who did not manifest the classical weight loss in anorexia nervosa but had a psychological orientation which was not clearly distinguishable from the eating disorder (Garner and Garfinkel, 1979). Clarke and Palmer (1983) report a similar finding of young women, not men, scoring above 30 on the EAT without having the clinical disorder. They confirmed this by holding clinical interviews with those scoring above 30. Around 50 percent were assessed as clinical cases where as the other half had either overcome the severe phase which requires treatment or did not display all the behaviours listed as diagnostic criteria for anorexia nervosa. This discussion, whilst justifying the concept of disordered eating behaviours being considered normal, also supports the significance of expanding the categories under the term eating disorders, discussed previously. There are obviously individuals who experience considerable emotional distress as a result of practicing abnormal and pathogenic eating behaviours, yet do not submit to the full criteria of the clinical syndrome.

In the studies discussed above, the normal controls overlapping patient groups may be an indication of individuals who could be classified as exhibiting a subclinical form of an eating disorder. These people experience significant concerns about their weight and may adopt abnormal eating behaviours. The high prevalence rates of dieting behaviours and concern about body weight discussed previously in this report support this hypothesis. Garner and Garfinkel (1979) carried out clinical interviews on the seven percent of normal controls who scored above 30 on the EAT. It was revealed that these normal subjects did,
in fact, experience significant concerns about their weight. Many women in particular seek slimness by constant dieting. Clarke and Palmer (1983) suggest that some of these women develop abnormal eating practices and attitudes towards weight and a few will go on to present with clinically significant eating disorders. It is hypothesised by Gralen and colleagues (1990), that the most common times of onset for anorexia nervosa and bulimia nervosa are early and middle adolescence and occur because of the appearance at this time of associated issues such as weight and shape consciousness, body dissatisfaction and belief in the efficacy of dieting.

Research constantly reports an increase in weight loss behaviours among adolescents (Rosen et al. 1990, Paxton et al. 1991). These behaviours may be an early sign of a change in their eating habits (Ledoux et al. 1993) and a translation of dieting concerns into dieting behaviours which could, consequently, increase their susceptibility to future clinical eating problems (Rosen et al. 1988, Hoberman and Kroll-Mensing, 1992). Determining the causal factors of eating disorders cannot be adequately done without prospective studies (Levey et al. 1989, Whitaker et al. 1989). The low prevalence rate of eating disorders, however, and high drop-out rates over the years of follow-up (Heilbrun and Friedberg, 1990) render these types of studies difficult.

One large prospective study carried out in England (Johnson-Sabine et al. 1988, Patton et al. 1990) provides some evidence for the argument that disordered eating behaviours are implicated in the development of eating disorders. The study was carried out on 1010 London schoolgirls near the ages of peak incidence for developing eating disorders. The
method employed two stages, a questionnaire on eating attitudes and general health and an interview designed to elicit personal, family, social and clinical information. Initial findings showed 83 percent of schoolgirls were dieting, of whom 24 percent were identified as cases of eating disorders. Twelve months later the same girls were re-screened and reinterviewed. Only six of the eight schools involved permitted re-screening, thus comparison of screening and re-screening was based on responses in these six schools. In the outset, there were 9.3 percent of responses scoring abnormal EAT scores. This figure was 8.3 percent at re-screening. Thirty-six (4.9 percent) subjects scored abnormally for the first time at follow-up and 3.4 percent of subjects scored abnormally on both occasions. Based on interview outcomes, the calculated prevalence rates for eating disorders was higher at follow-up (8.1 percent) than at the outset (2.7 percent). The researchers concluded that dieting does predispose to the later development of an eating disorder, as the relative risk of a dieter being diagnosed with an eating disorder at follow-up was around eight times that of a non-dieter in the study population.

2.5 Sociocultural causes of eating disorders

A relationship between eating attitudes and behaviours has relevance to the theory of causation as it has been hypothesised by researchers that abnormal eating attitudes and concern about body weight and shape can contribute to the development and maintenance of an eating disorder (Hoberman and Kroll-Mensing, 1992, O’Dea, 1995).
One cause which has been implicated in a strong way, is the modern cultural construction of the female form. A great deal of emphasis is placed on women having a toned, slender body. The fashion and advertising industries and the media help reinforce the message that this ideal figure brings success, health, intelligence, and worthiness as a person (Tiggemann and Rothblum, 1988, White, 1991, Kirk, 1993, O'Dea, 1995). Today the body is seen by some as a symbol of control. Slimness can be viewed by individuals, and others around them, to be a result of a controlled and disciplined lifestyle (Bartky, 1988, White, 1991). Whereas excess body weight has come to represent lack of will, inadequacy (White, 1991), less activity, poor health, less intelligence, and less success (Tiggemann and Rothblum, 1988), a toned, slender body represents control and discipline, (White, 1991) as well as a secure sense of identity (Bartky, 1988), sexual attractiveness (Smith et al. 1990, Kirk, 1993), and worthiness as a person (Kirk, 1993). The link to eating disorders is that women and adolescents, who both desire success in life, may blindly adopt pathogenic eating behaviours and attitudes, such as dieting, bingeing, purging, and concerns with body shape, in an attempt to achieve this ideal and live up to expectations placed on them by the media, family, and friends.

Several researchers and feminist writers have contributed to sociocultural theories of the aetiology of eating disorders (Bartky, 1988, Bordo, 1988, Hesse-Biber, 1989, White, 1991, Paxton and Sculthorpe, 1991, Wiseman et al. 1992, Kirk, 1993). There has been a dramatic shift in ideals since the beginning of the twentieth century up until today. Fatness used to be traditionally associated with prosperity and good health until the medical establishment began to reveal a concern over the relationship of obesity to morbidity (White, 1991). As a
consequence of time and technological developments, a slim body became the epitome of health, beauty and success.

As previously discussed the increase in behavioural symptoms of eating disorders, as opposed to the clinical syndromes, is not necessarily associated with "full-blown psychopathology" (Hesse-Biber, 1989:80). It has been proposed that this increase in prevalence rates of disordered eating among children (Maloney et al. 1989) and adolescents is likely to be linked to the changing cultural emphasis towards slimness in women. Abraham, et al (1983:225) also discuss this hypothesis when reporting that weight preoccupation is "greater in those young women who are under pressure to maintain a low body weight". Cultural "norms" which display the ideal feminine form as slender, lean and glamorous (Hogan, 1995) may contribute significantly to this pressure.

Modern culture has relentlessly pursed the ideal of thinness in the feminine form to the point where it has a dramatic impact on the lives on individuals. Studies and writings support the hypothesis that the ideal woman's body size has remained thin and is perhaps becoming thinner (Wiseman et al. 1992, Hogan, 1995). There have been studies in Britain of fashion models over the years 1967-1987 which demonstrated that the desired body shape has seen busts and hips decrease and height increase (Wiseman et al. 1992). Studies in America have surveyed the ideal female images in Playboy magazine and the bodies of Miss America over a twenty year period to reveal a significant shift towards a thinner ideal. Society also adopts this view and in doing so, creates a standard or socially desirable body size by which all women are judged. The methods women experiment with to maintain a
socially desirable image often include dieting, restricting meal sizes in public (Basow and Kobrnynowicz, 1993), wearing make-up, removing body hair, skin care regimes, and walking in a certain way (Bartky, 1988). The feminist perspective acknowledges medical contributions, particularly the dawn of cosmetic surgery, which act to reinforce cultural ideals, as an explanation for the prevalence of dieting and other subclinical forms of eating disorders. However, they place a greater importance on the existence of a struggle in which women are in conflict with the norms of a patriarchal society (Bartky, 1988, White, 1991), and also are in conflict with themselves in an attempt to win control over their mind, and their life, to the point of dieting to delay development or cease menstruation (Bordo, 1988).

2.6 Body Image

The discussion in this report will also focus on the use and results of the Body Shape Questionnaire (Cooper et al. 1987), or BSQ, which was one of the two methods of assessment used in this study. Whilst it is reported in the literature that body image and its distortion is central to the concept of eating disorders and that discontent with body appearance is the primary motivating reason for weight loss (Fabian and Thompson, 1988, Wardle and Foley, 1989, Bunnell et al. 1992, Lask and Bryant-Waugh, 1992, Hoberman and Kroll-Mensing, 1992, McCallum, 1993), there remains some debate over the definition of body image as it relates to anorexia nervosa and bulimia nervosa.

Body image distortion is used in discussions of the psychopathology of both disorders. Researchers report two problems with the concept. Firstly, there is no universally accepted
definition of body image (Hoberman and Kroll-Mensing, 1992, Offman and Bradley, 1992, McCallum, 1993). As described by Hsu and Sobkiewicz (1991) there are generally two different perspectives that can be taken, that of a neurological or diagrammatic representation of the body in one's consciousness, and that of a psychological definition in terms of one's feelings and attitudes towards their body. The second problem with the concept, is that there cannot be a blanket terminology for both disorders. This is due to the fact that body image is portrayed differently in the criteria which define anorexia and bulimia. In anorexia nervosa there are disturbed experiences with body weight and shape (Bunnell et al. 1990) and they show a lack of concern for their malnourished state (McCallum, 1993), thus the term "body disparagement" more aptly defines this anorexic perspective of the body (Lask and Bryant-Waugh, 1992, McCallum, 1993).

Characteristically in bulimia nervosa, there is more of an over concern about body weight and shape (Bunnell et al. 1990).

Studies which use diagrammatic representation and the technique of overestimation to provide a better understanding of the psychopathology of eating disorders (Hsu and Sobkiewicz, 1991) are faced with important methodological limitations. Wardle and Foley (1989) report the importance of body size estimation to the psychopathology of eating disorders and even suggested that this aspect of body image is the main emphasis of recent research. Hsu and Sobkiewicz (1991), however, propose the hypothesis that overestimation may not be related to body image disturbance. In their study they found that some of the normal controls overestimated their body, as did some of the anorexic and bulimic participants, whereas others did not. This finding was also supported by Lask and Bryant-
Waugh (1992). They suggested in their conclusion that future research be more directed towards body attitudes and feelings rather than overestimation, ie. attitudinal rather than perceptual dimensions of body image. The application of the BSQ in this study incorporates this suggestion and allows a direct assessment to be made of attitudes about body shape and engaging in behaviours to change body shape.

2.7 Studies using the EAT

Overall, the results from other studies which have used the EAT have produced relatively consistent findings. The percentage of participants scoring above the cut off point, which indicate a predicted clinical disorder, fall within close range of each other. Clarke and Palmer (1983) used the EAT in a postal survey of male and female university students. The students were randomly selected from the first and second year. Third year students were avoided because of the proximity of final examinations. The results were 11 percent of the female respondents, but none of the males, scored above 30 on the EAT. Smead and Richert (1990) found comparable results in another university population. The sample comprised volunteer undergraduate students who were representative of the total undergraduate population. The results showed that nine percent of the female students and just over one percent of males scored above 30 on the EAT. Paxton and Sculthorpe (1991) surveyed female university students and found 11 percent scored above 30. The sample consisted of students who were first briefed on the nature of the survey, and then chose to participate if interested. No discussion was made concerning response rates or how representative the sample was of the population. However, these results mirror those of
Clarke and Palmer (1983), suggesting that the sample was representative. Button and Whitehouse (1981) examined college students and used a revised cut-off score of 32 on the EAT to define the clinical anorexic subjects. They found that in this population just over 6 percent of the females, but no males, exceeded the score. Thus, despite increasing the cut-off score to 32, the findings were consistent with studies that employed a cut-off score of 30.

One study conducted by Hesse-Biber (1989), who administered the EAT to college students, via a postal survey, had some unexpected results. Twenty percent of female students were in the abnormal range on the EAT and two percent of the males also scored in the abnormal range. The differences between the males and females were statistically significant. There is no explanation by the researchers as to why this result is a lot higher than other studies. One reason could be that the sample was over represented by females; 71 percent of the sample were females compared to 29 percent of males. Another reason could be the difference in the methodology used. Whilst the EAT was used, it was the shortened version known as EAT-26. The EAT-26 still measures a broad range of behaviours and attitudes characteristic of individuals with anorexia as the EAT does, however, the items are divided into three sub-scales and the scores are totalled in a slightly different way. Therefore, this last study can not be compared on the same scale as the previous studies which used the 40-item EAT.
2.7.1 Applying the EAT to non-clinical populations

The studies discussed above have all sampled university students which have not come from a clinical population, ie. those already diagnosed or being treated for an eating disorder. Some researchers have claimed that using the EAT on non-clinical populations may represent a misapplication of the screening instrument (Smead and Richert, 1990). They report that this is due to the possibility that normals may organise information about food and dieting differently than do people with anorexia. This possibility seems to be the very reason why EAT would be used in non-clinical or “normal” populations. The EAT can be considered versatile in that it can be used to detect possible cases of anorexia nervosa in populations which are at high risk for developing an eating disorder, for example university students and adolescents, and it can also be used to evaluate treatment outcomes, as it has been shown to be sensitive to clinical remission (Garner and Garfinkel, 1979).

The EAT is intended to be an index, or indication, of symptoms observed in anorexia nervosa. Given that the EAT is to be used as a predictor of a clinical diagnosis of an eating disorder, applications of the EAT to clinical groups only, other than for determining treatment success, would be futile as it is expected that the score would be above 30. An argument for the use of the EAT in non-clinical populations is the fact that in the original validation study, Garner and Garfinkel (1979) used a group of normal controls, ie. non-patients, comprised of university students to show that behaviours and attitudes found in anorexia nervosa are found to varying degrees in non-patient populations. Due to the higher prevalence of eating disorders and abnormal eating behaviours amongst university
students, this population group can not be considered “normal” in the sense that the general population is.

The argument against using the EAT in a non-clinical population applies more appropriately to the general population for important methodological reasons. Firstly, the EAT is an ineffective screening instrument because the validity coefficients are too low, thus having low sensitivity, due to a much lower prevalence of eating disorders in the general population (Patton et al. 1990, Patton and King, 1991). Secondly, eating disorders in a general population are less severe and less well defined than in a clinical population, and thirdly, there is a possibility that in a sample from the general population, certain girls with an eating disorder could give incorrect answers (Patton et al. 1990).

2.8 Studies using the BSQ

The BSQ has not been used very extensively. The sample groups employed in studies which used the BSQ have consisted of at least two groups, generally a clinical group and a normal control group. The researchers have compared the total scores between each group and made conclusions about the differences observed. Thus, one difference between previous uses of the BSQ and the use of the BSQ in this study on university students is that previous studies did not employ a cut off score. The significance of previous studies to this study will be that the scores obtained in clinical groups can be used to make comparisons between the scores from the university sample and scores from known clinical cases of bulimia.
Hadigan and Walsh (1991) used the BSQ to test the significance of shape and weight concern in bulimia nervosa. They administered the BSQ to 78 outpatients with bulimia nervosa and three comparison groups: 14 women with seasonal affective disorder (SAD), 10 acquaintances of the patients, and 32 normal controls. The normal controls were women who responded to posted notices recruiting healthy women of normal height to take part in a survey. They were screened and excluded if there was any history of depression, anxiety, or an eating disorder. The acquaintances were included to obtain a group of women similar to the patients with bulimia in age and background. The results were that bulimia nervosa patients had a significantly higher mean BSQ score (141.6) than did the other subject groups (SAD = 82.9, acquaintances = 60.7, normal controls = 64.6). The SAD group was found to have a mean age that was 10 years higher than the bulimia nervosa group. The authors suggest that this age difference could account for the difference in mean BSQ scores for these groups. The acquaintance group was relatively small and this places limitations on the statistical power of comparisons involving this group. The study also examined the relationship between body shape and weight concerns and other measures of bulimic symptomatology. There was no significant correlation between BSQ score and binge frequency, vomit frequency or duration of illness in the patients with bulimia nervosa. The conclusion was that the data supported the continued inclusion of body shape and weight over concern as a diagnostic criterion for bulimia nervosa (Hadigan and Walsh, 1991) as the BSQ score of sufferers was more than twice that of normal controls.

Bunnell et al. (1992) used the BSQ in a study to compare the scores, and thus the extent of concerns about body shape, in five adolescent sample groups: anorexia nervosa, bulimia
nervosa, subclinical bulimia nervosa, subclinical anorexia nervosa, and non-eating disordered adolescent females. The clinical group of 81 females, later classified into four groups, had been referred to hospital for evaluation and treatment of an eating disorder. The control group consisted of 88 female high school students in ninth through to twelfth grade from a similar demographic area to the clinical groups. There was no significant difference between the age or heights of the five groups. The comparison sample group reported the lowest levels of thoughts, feelings, and behaviours associated with body shape concerns. However, the extent of these concerns was not significantly different from the levels found in three of the clinical groups: patients with anorexia nervosa, subclinical anorexia nervosa, or subclinical bulimia nervosa. The BSQ scores in the bulimia nervosa group were the only scores that were significantly different from those scores in the comparison sample. The mean BSQ score from the bulimia nervosa group was also significantly greater than those found in the two anorexic samples and the subclinical bulimia sample. The conclusion was that the level of body shape dissatisfaction appears to differentiate adolescent patients with bulimia nervosa from patients with other forms of restrictive eating pathology, including formal anorexia nervosa (Bunnell et al. 1992).

Bunnell and colleagues (1992) also made important comparisons of BSQ scores with the original study by Cooper et al. (1987). The scores in the study by Bunnell et al. (1992) were consistently higher than the original study. Cooper and his colleagues (1987) reported an average BSQ of 71.9 for their sample of "definite non-cases of bulimia nervosa", and means of 129.3 for samples of "probable cases of bulimia nervosa" and 136.9 for samples of "patients with bulimia nervosa". The group of bulimia nervosa patients was previously
clinically diagnosed and attending a psychiatric outpatient clinic. The “probable cases of bulimia” were those from the normal community sample who fulfilled self-report diagnostic criteria for bulimia nervosa, ie. the current occurrence of bulimic episodes at least once fortnightly, the current occurrence of compensatory vomiting or laxative abuse, and a fear of becoming fat rate as “marked”, or the most extreme point on the scale, taken from an additional information sheet completed in the outset. The “definite non-cases of bulimia nervosa” were those from the normal community sample who did not binge, vomit, or use purgatives. The results of the study above have limited application. The scores from the cases of bulimia nervosa and non-cases of bulimia nervosa may provide a guide as to the scores expected from a patient group and those expected from women without bulimia. However, the scores from the probable cases of bulimia nervosa can not rightly be used to make comparisons, as data to determine the level of bulimia of the normal sample was not obtained for this study. The subjects in the BSQ validation study completed a background information sheet which asked questions about their demographic characteristics, weight and eating history, and the importance the subject placed on being slim and on her attitude towards becoming fat (Cooper et al. 1987).
CHAPTER THREE

Methodology

This study utilises data previously collected but not yet analysed. Questionnaires were posted to all first year Wollongong University students enrolled for the 1992 academic year. First year students were chosen to be the sample because, in undertaking their first year of university study, they are untainted by the university experience. Male and female students were asked to anonymously report on their own eating behaviours and attitudes. In addition, female students were asked to report on the level of concern about their body shape and certain behaviours which may be adopted to obtain a "desirable" body shape. The questionnaire also contained questions pertaining to demographic details, such as age, sex, language spoken at home, country of origin, faculty studying in, and accommodation. Combined with comparative analysis of results from past research into eating disorders and university populations, the responses from the questionnaires were intended to be used to describe the extent of abnormal eating behaviours and attitudes and body shape concerns in undergraduate students attending Wollongong University.

3.1 Study Sample

A total of 3325 undergraduate students commenced at Wollongong University in 1992. Of these commencing students 1367 were first year students and were eligible for inclusion in the study. The mean age of all students in the sample was 18 years. Of the 1367 questionnaires sent out, 511 were returned (37.4 percent response rate). Questionnaires
were sent to 707 females with 320 returned (45.3 percent), and 660 males with 191 returned (28.9 percent).

Those questionnaires returned from mature-aged students, representing 1.58 percent of responses, were not used in analysis because of their older age or that they had undertaken previous study. They were excluded because it would not be possible to make comparisons with the first year students because of the presence of confounding variables, such as age and previous exposure to university. Sixteen (five percent) questionnaires were incomplete but were retained for analysis.

**TABLE 3.1**

*Demographic details of study sample compared to total commencing undergraduate students*

<table>
<thead>
<tr>
<th>Demographic variable</th>
<th>Study sample</th>
<th>Total commencing undergraduate students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex: Males</td>
<td>191 (11.9%)</td>
<td>1602</td>
</tr>
<tr>
<td>Females</td>
<td>320 (18.6%)</td>
<td>1723</td>
</tr>
<tr>
<td>Language spoken at home:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>474 (18.8%)</td>
<td>2517</td>
</tr>
<tr>
<td>Non-English speaking</td>
<td>34 (4.2%)</td>
<td>808</td>
</tr>
<tr>
<td>Country of origin:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>456 (15.4%)</td>
<td>2954</td>
</tr>
<tr>
<td>Overseas</td>
<td>53 (14.3%)</td>
<td>371</td>
</tr>
</tbody>
</table>

Table 3.1 details the number and percentage of the total number of commencing students for that demographic characteristic represented in the sample population... Pearson's chi-
square test revealed fewer than expected males completed questionnaires. The sex
distribution of the sample was, therefore, not completely representative of the commencing
university population \((x^2 = 28.2, p < 0.001)\). The place of origin of students in the sample
was found to be very representative of the commencing population using Pearson’s chi-
square test \((x^2 = 0.34, p = 0.5)\). Finally, the sample was not found to be representative of
the commencing population for language spoken at home \((x^2 = 101, p < 0.001)\) using
Pearson’s chi-square. There were large differences between observed and expected
numbers of students from non-English speaking backgrounds (NESB) who returned
questionnaires. This could be a consequence of the language barrier and inability of non-
English speaking students to understand the questionnaire and follow instructions to
complete and return it. The culturally-biased nature of the questionnaire may explain the
poor response.

According to Figure 3.1 the majority of students in the study sample were enrolled in
science, health and behavioural science, and informatics. There were significant differences
between the sample and the commencing university population regarding representation of
faculties \((x^2 = 48.8, p < 0.001)\). Fewer than expected numbers of Commerce, and possibly
Engineering and Health and Behavioural Science students returned questionnaires. This
could be due to the greater proportion of males in the Commerce and Engineering faculties,
or that students from Health and Behavioural Science, for example, did not return
questionnaires because of shame or guilt about practicing certain abnormal eating
behaviours.
3.2  

Response rates

A disadvantage of postal surveys is the probability of a poor response rate. The adequacy of the response rate in this study can be compared to other studies on eating disorders which used the same method of surveying. Hesse-Biber and Marino (1989) posted surveys to university students on two occasions and had a response rate of 41 percent and 48 percent. Striegel-Moore et al. (1989) also surveyed university students and had a 74 percent response and Clarke and Palmer (1983) conducted a postal survey of first and second year university students and had a 67 percent response. The higher response rate in the survey by Striegel-Moore et al. (1989) could be accounted for by the fact that participants were
asked to complete the questionnaire on registration day and return it immediately. Clarke and Palmer (1983) achieved their high response rate because they sent out a second letter to non-responders saying that an anonymous response was better than none. Posted responses rely on the memory, motivation and enthusiasm of respondents. Although it is desirable for the generalisability of the results and the significance of statistical calculations to have a high response rate, it is not the most important consideration. The sample must be representative of the population it is taken from. In the study by Hesse-Biber and Marino (1989) the sample was not representative of the proportions of sexes in the class with females being over-represented. Of the surveys returned, 29 percent were from men and 71 percent were from women. Similarly, in the present study, fewer than expected males returned questionnaires (29 percent for males compared to 45 percent return rate for females). The sex distribution of the sample was, therefore, not found to be representative of the population of commencing students. Many of the studies on eating disorders mentioned above had a better response from females than from males as in the present study. No theories confirming or denying this were available in texts on survey methodology. However, Moser (1969) documents the main influences on the response rate in a survey to be its sponsorship, its subject matter, and its population. Women can have a particularly strong relationship to food and health and are perhaps more interested and motivated to participate.

When considering the reasons for the number of non-responders in this study, and any other study of eating disorders, it is necessary to take into account the variables being measured by the questionnaire and the feelings of guilt, shame, secrecy and denial which may
accompany an eating disorder (Levey et al. 1989). Alternately, it is possible that students with odd eating attitudes or even a clinical disorder may have chosen not to respond or deny they have a problem. Estimates of the prevalence of behaviours, attitudes and disorders obtained from the study, may therefore be lower than the true figure (Clarke and Palmer, 1983). Or it may be that students who responded used the anonymity and confidentiality of the questionnaire to express their disturbed eating patterns (Hesse-Biber and Marino, 1989), thus, having a higher that expected representation of eating attitudes and behaviours indicative of possible cases of eating disorders. The most likely scenario is that the prevalence of behaviours, attitudes and predicted clinical disorders will be lower than the true figure. Because the presence of eating disorders are surrounded by shame and denial, participants may not have responded truthfully to the questionnaire. This could also have been the reason for the number of non-responders.

3.3 The Study Instruments

The questionnaire employed in the study consisted of eight questions establishing demographic information (see Appendix One), including age, sex, faculty of study, country of birth, language spoken at home, year of study, and form of accommodation; the 40-item Eating Attitudes Test, or EAT (Garner and Garfinkel, 1979); and the 34-item Body Shape Questionnaire, or BSQ (Cooper et al. 1987). The EAT has been used and validated extensively in past research on both male and female subjects (Clarke and Palmer, 1983, Lachenmeyer and Muni-Brander, 1988, King, 1989, Smead and Richert, 1990). In this study both males and females were asked to complete the EAT. Item 23 on the EAT,
relating to having regular menstrual periods, was not scored for male subjects. The BSQ, used less extensively than the EAT, has previously been used and validated only on female subjects (Cooper et al. 1987, Bunnell et al. 1990, Hadigan and Walsh, 1991). Thus, in this study only female students were asked to complete the BSQ.

Most texts on survey methodology explain the limitations of self-administered questionnaires, such as not allowing for elaboration on responses and the possibility of different interpretations of questions by respondents. The methodology is further limited by the question format, ie. self-report Likert scales. The nature of the questions force the respondent into a category. The responses are subjective and limit the information available about that attitude or behaviour. It can often be difficult to rely on the responses as reported by the individual, especially on complex and emotive subjects such as eating disorders (Moser, 1969).

3.3.1 The Eating Attitudes Test

The Eating Attitudes Test (EAT), included in Appendix Two, is a 40-item questionnaire in a six-point, forced choice, self-report format. The questionnaire was developed to be used as an index of symptoms frequently observed in anorexia nervosa. Each extreme response in the “anorexic” direction is scored as three points, while the adjacent alternatives are scored as two points and one point respectively. The total score is assumed to reflect the level of symptoms of anorexia nervosa displayed by the participants. The cut-off score used in this study to determine predicted clinical cases of anorexia nervosa versus differing
levels of disordered eating attitudes and behaviours in other participants was 30. Scores above 30 on the questionnaire, and those below, indicate the predicted cases of anorexia nervosa or subjects reporting "anorexic-like behaviours", ie. weight loss and dieting practices, respectively. Reasons for the choice of 30 as the cut-off score are discussed below.

3.3.1.1 Validity and reliability of the EAT

Validity is the degree to which an instrument, such as a questionnaire, measures what it is intended to measure and reliability is the extent to which a research instrument will produce the same results on more than one occasion, all other things being constant (Cockburn and De Luise, 1992).

The study which documented the construction of the Eating Attitudes Test (Garner and Garfinkel, 1979) involved several tests for validity and one test for reliability. The study used two independent groups of female anorexia nervosa patients and female normal control subjects. The anorexic subjects (mean age of 18.4 years) all met the criteria for anorexia nervosa but were at various stages of treatment and weight restoration. The normal control subjects were university students from the same socioeconomic background as the anorexic subjects. Preliminary items for the questionnaire were developed from the literature and the original version was piloted with anorexic and normal control subjects. Meaningful items, those on which the anorexic subjects scored significantly higher, were retained and the remaining items were re-worded and new ones were added. To determine
the test's predictive ability, cross validation was carried out on an independent sample of anorexia nervosa patients and normal controls. The computed validity coefficient revealed the test to be a good predictor of group membership, i.e., the scores on the EAT predicted clinical cases of anorexia nervosa. Individual items on the questionnaire were determined to be valid by examining the degree to which item scores were predictive of group membership. The EAT items were found to be significantly correlated to groups and thus considered to have a high predictive ability. A factor analysis verified the construct validity of the EAT: that individual items are a valid measure of the particular symptoms it was intended to measure.

The EAT was found to discriminate cases with symptoms usually found more often in an anorexic population from those not displaying the symptoms (discriminant validity). Some overlap was evident in EAT scores between the anorexic subjects and the normal controls with 7 percent of normal controls falling above the lowest anorexic subject's score of 32. Thus, the researchers proposed a cut-off score of 30. This was to allow for the identification of normal subjects with eating concerns comparable to those of a person with anorexia nervosa. Subsequent studies using the EAT employed the cut-off score of 30 because it was found to be a good discriminator between anorexic and non-anorexic subjects in the original study (Clarke and Palmer, 1983, Smead and Richert, 1990). Garner and Garfinkel (1979) found that some individuals from non-anorexic samples scored as "symptomatic" on particular items and a significant number of the non-anorexic sample scored in the range overlapping with the lowest anorexic group. This may correlate with
the phenomenon of an increasing prevalence of subclinical forms of, or symptomatic
behaviours associated with, the clinical syndromes.

The degree of internal consistency, or how well each item correlates with each other item in
the scale (Cockburn and De Luise, 1992), as an assessment of reliability, was demonstrated
to be high despite the relatively small number of items on the EAT (Garner and Garfinkel,
and Marino, 1989, Smead and Richert, 1990) examined the validity of the EAT they came
to the same conclusions as those from the original study. It is important to the validity of
research that the questionnaire be used in sample groups that are from the same populations
in which the EAT has already been validated, that is adolescent females, males, and
university populations.

3.3.2 The Body Shape Questionnaire

The Body Shape Questionnaire (BSQ), included in Appendix Three, is a 34-item, six-point
Likert scale in a self-report format which measures the subjects’ experience of “feeling fat”
over the previous four weeks. The questionnaire was developed to measure the body shape
cconcerns of participants. The questionnaire does not focus on body size overestimation
because this feature has been extensively studied in the past. The self-report measure was
developed by Cooper and colleagues (1987) because prior to the development of the BSQ,
there existed no appropriate method of measuring concerns about body shape. The items
are scored using a one to six scoring method (“never” = 1, “always” = 6). The level of
concern about body shape of individuals or groups is indicated by comparing total BSQ scores.

In this study, predicted cases of bulimia nervosa are indicated by a BSQ score greater than 140. Scores below 140 indicate varying levels of concern of participants about their body shape. Reasons for the use of 140 as a cut-off score are discussed below.

The BSQ has not been as widely applied in research as the EAT and there is no commonly used cut-off score which can be applied to the BSQ as there is for the EAT. Studies which use the BSQ simply discuss mean scores of patients and non-patients. As the items on the BSQ have been shown to clearly distinguish between bulimic and non-bulimic (Cooper et al. 1987, Hadigan and Walsh, 1991), mean scores parallelling those of patients with bulimia nervosa would be an indication of likely bulimic cases in other studies. Hadigan and Walsh (1991) documented the bulimia patients in their sample to have a mean BSQ score of 141.6 and the normal controls to have a BSQ score of 64.6, thus the bulimic scoring more than twice that of normals. The study by Bunnell et al. (1992) found bulimic patients to have a mean score of 157.2 and normal controls to have a BSQ score of 91.8. These BSQ scores for patients are consistently higher than Cooper et al. (1987) who recorded their bulimic patients to score 136.9 and normals to score 81.5. The difference between the studies discussed above and this study being conducted on Wollongong university students is that the sample is assumed to be non-clinical from the outset, whereas former studies derived their samples from both clinical and non-clinical sources. While other studies employing the BSQ compare the scores of the patients and non-patients, this
study requires a pre-determined BSQ score that will define predicted clinical cases of bulimia nervosa. The score designated as the "cut-off" point is 140 in this study. This is close to the average score from bulimic patients in the studies by Cooper et al. (1987) and Hadigan and Walsh (1991).

The BSQ asks participants to answer the questions according to their feelings about their appearance over the past four weeks. Feelings, emotions and mood states are central to the diagnosis of both eating disorders. Individuals with bulimia nervosa have an increased frequency of depressive symptoms and mood disturbances often brought on by low self-esteem and increased anxiety. This state of mind is perpetuated by feelings related to body weight, body shape, and food, by a sense of lack of control and dissociation during a binge, and by individuals feeling ashamed of their eating problems and attempting to conceal their symptoms. Individuals with the purging-type bulimia nervosa have shown more symptoms of depression and greater concern with shape and weight than individuals with the non-purging-type of bulimia nervosa (American Psychiatric Association, 1994). The BSQ cannot detect clinical cases of bulimia nervosa but the items on the BSQ were chosen because of their power to differentiate between clinically diagnosed patients with bulimia nervosa and non-patients. In the original study by Cooper and colleagues (1987) some scores in the non-patient sample overlapped those of the patient sample. This was expected, as the psychological dimension being measured is known to exist in varying intensity within both groups (Cooper et al. 1987). The conclusion of the BSQ development was that the questionnaire "should be regarded as providing a measure of the extent of psychopathology rather than a means of case detection" (Cooper et al. 1987:490). In this
study, the scores which reflect the level of concerns about body shape will be measured
against the scores from the original study by Cooper and colleagues (1987), specifically
those from the clinically diagnosed cases of bulimia nervosa. A comparison of BSQ scores
will determine individuals or groups who have the greatest concern about their body.

The BSQ is a simple self-reporting method of concerns about body shape and certain eating
practices. There are obvious disadvantages with using self-report measures but like with
any method of surveying these issues need to be acknowledged and discussed in relation to
the findings. Most research focused on the perceptual dimension of body image, i.e. body
size overestimation and many measurement tools only dealt with dissatisfaction with
various body parts and concern with bodily appearance. Until the development of the BSQ
there had been little research into concern about body shape as an attitudinal dimension of
body image (Cooper et al. 1987), and consequently, no satisfactory measure of such
concerns existed until now.

### 3.3.2.1 Validity and reliability of the BSQ

When Cooper and colleagues (1987) developed the Body Shape Questionnaire they
performed a number of tests for validity. A test for concurrent validity was conducted
which involved comparing another measure of the same phenomena and the EAT with the
BSQ in the patient and non-patient group. In both groups the BSQ and the EAT were
found to be highly correlated with one another. In other words, in groups with and without
bulimia nervosa, persons with a high BSQ score tended to score highly on the EAT. Thus a
relationship exists between the two inventories. Another assessment of validity was
conducted within the non-patient sample. Responses on a background information sheet, detailing weight and eating history and attitudes about slimness and fatness, filled out separately to the BSQ, identified one group of women as being concerned about weight and shape. Another group was identified as unconcerned about weight and shape. The mean BSQ score for the “concerned group” and the “unconcerned” group were 109.0 and 55.9, respectively and the difference between the groups was statistically significant.

Specifically for the present study, a gradient of scores was developed to classify levels of concerns about body shape in non-patient groups compared to clinically diagnosed cases of bulimia. It has already been established that a BSQ score greater than 140 is indicative of extreme bulimic symptomatology. Using the mean BSQ scores obtained from comparing the patient group (136.9) and the community group (81.5) and the scores from the different sub-groups within the community group discussed above, the level of concerns reported by a respondent can be graded, such that a score greater than or equal to 140 would indicate extreme concerns, 139-100 would indicate moderate concerns, 99-61 would indicate mild concerns, and less than 60 would be very little concern. A classification of concerns is necessary because, as the results from the second assessment of validity show, within non-patient groups, or those not clinically diagnosed with bulimia nervosa, concerns about body shape vary.

A third assessment of validity was performed on the community sample who were split into two groups: those who fall into the self-reported criteria for bulimia nervosa, taken from the diagnostic criteria developed by the American Psychiatric Association (1994), and those
who were definite non-cases. Both groups had markedly different scores on the BSQ. In addition, the first group’s scores were also compared to the scores from the patient group and found not to be significantly different from the known bulimia nervosa patients. These four tests indicate that the BSQ is a valid measure of body shape concerns that compare with clinically diagnosed bulimia nervosa patients, as on all four occasions the BSQ scores statistically distinguished bulimic from non-bulimic attitudes and concerns. The BSQ was shown to be valid because it clearly differentiated between patients and non-patients and it distinguished non-patients who were concerned about their weight from those who were unconcerned.

The study by Cooper et al. (1987) documents three assessments of validity yet does not discuss any tests for reliability. There is no comment about instructions given to participants or whether the participants filled out the questionnaire under the same environmental conditions. These factors can affect the reliability of the responses.

The BSQ is a suitable instrument for this study because it has been validated in female samples and also in undergraduate university students. Hadigan and Walsh (1991) have used the BSQ on female samples and also found the instrument to be valid in a test for concurrent validity. The scores from their sample groups showed that patients with bulimia scored substantially higher than other groups (friends of patients, seasonal affective disorder patients and normal controls). Bunnell and colleagues (1992) also distributed the BSQ to female patient and normal control groups. A test for concurrent validity by these researchers proved the BSQ to be a valid tool for use in adolescent populations. In a
replication of the original validation study, the BSQ scores from all groups strongly correlated with total EAT scores.

3.3.3 Limitations of the EAT and BSQ

The EAT and BSQ do not allow a formal clinical diagnosis of eating disorders to be made. The results obtained using these measurement tools are intended to be used to provide information and make inferences about possible incipient cases of eating disorders, through the investigation of attitudes and behaviours which parallel those of a person with an eating disorder. Diagnosis of an eating disorder involves a formal clinical interview with, and assessment of, the patient. The patient must satisfy criteria from the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) devised by the American Psychiatric Association (1994). A summary of the diagnostic criteria for anorexia nervosa and bulimia are included in Appendix Four.

King (1989) discusses important limitations of the EAT. While the questionnaire can distinguish between distinct groups, it may not perform well in classifying individuals with varying degrees of probability of an illness. The positive predictive value of an instrument (how often a high scorer on a test will actually be a “case”) decreases greatly when the prevalence of the condition being measured drops below 20 percent. King (1989) suggests that this methodological issue can be overcome with an instrument which has high sensitivity (how often a “case” is recognised as such by an instrument) and specificity (how often a “non-case” is recognised by the instrument). Garner and Garfinkel (1979)
documented that they determined the predictive ability of the EAT, as an essential component for a test of validity, to be high. Despite this, the EAT has been criticised for not positively predicting cases (King, 1989).

A method adopted by some researchers in the past and claimed to be very useful but under-utilised (Patton and King, 1991) is the two-stage survey. This method, in which a population is initially screened with a self-report questionnaire and high and low risk subjects are selected for a clinical interview, may be one strategy for proving the sensitivity of a questionnaire such as the EAT. The two-stage survey was not employed in this study on university students but reviewing the successes other researchers had with this method may provide an insight into the extent to which the EAT can predict "caseness". Clarke and Palmer (1983) identified 18 (11.5 per cent) female university student respondents as scoring above 30 on the EAT. Of these 18 females with predicted cases of anorexia nervosa, 11 attended for a one-hour semi-structured interview concerning dieting, eating behaviour, mental state, social history and attitudes to therapy. One participant was excluded because of casual responses to the questionnaire giving a misleading high score. From the 10 high scoring subjects, five were assessed as being clinical cases. Johnson-Sabine et al. (1988) identified 83 (8.2 percent) high school girls as having an abnormal EAT score. After interview, four cases (four percent) of eating disorder (bulimia nervosa) of clinical severity were discovered. No cases of anorexia nervosa were detected. Eighteen cases (22 percent) of subclinical eating disorders were identified. In both studies it appears that the sensitivity of the EAT is lower than the predictive ability computed in the original validation study. Consequently, the cases detected which indicate participants as
having eating behaviours and attitudes comparable to those of a person with anorexia nervosa, need to be treated with some caution. The results of the studies using the two-stage survey highlight the fact that the EAT can only be used in the capacity of a screening device in “at risk” groups. As Hesse-Biber and Marino report, “the EAT is a pencil and paper measure and not the result of a thorough psychiatric interview” (1989:203). The fact that, even after interview, few of the high scorers on the EAT are actually diagnosed as clinical cases emphasises the limitations of the questionnaire in fully ascertaining the degree of eating problems amongst university students. This view is supported by Johnson-Sabine and colleagues (1988) in their report which again indicates the best use of the EAT as a screening instrument to identify a population whose eating habits require further investigation. This study does not attempt to identify clinical cases so the EAT is an appropriate instrument for a preliminary investigation of the range of eating behaviours and attitudes in a sample of Wollongong University students.

In analysing and discussing results it is important to consider the methodology used and potential limitations this may place on the findings. Garner and Garfinkel (1979) mention that one of the limitations of self-report inventories is that they rely on the assumption that the subjects will accurately describe their symptoms. This is especially relevant to the area of eating disorders due to the very psychopathological nature of the illness and the often accompanying trait of denial about the disorder. This is further supported by Shaw and Garfinkel (1990) in their discussion of research problems in the eating disorders. They also raise important issues of the reliability and validity of subjective reports about eating behaviours and attitudes. Measure of body weight and frequency of binges may be
considered objective measures. Other features of eating disorders are mostly subjective. Shaw and Garfinkel (1990) illustrate this point by discussing the reporting of a binge. The perceptions of a binge will vary with individuals depending on their experiences. For example, a person may eat one cookie after dinner and consider this a binge, where as other people would consider severely overeating as a binge. The perceived loss of control which characterises this symptom of bulimia is inferred from the patient’s self-reporting of their eating behaviour and is subject to individual interpretation.

There are certain response effects which can affect the validity of the results (Cockburn and De Luise, 1992). There is the acquiescent response where people answer “yes” to questions no matter what the content. This was overcome in the EAT by the use of a six-point Likert scale which gives participants the choice to answer positively or negatively on each question. Results can also be affected by social desirability. People may respond to questions with answers they consider to be socially acceptable. The instructions on the EAT clearly state to answer questions carefully, ie. give them thought before choosing a category. Sometimes surveys may instruct the participants to respond according only to their opinion. It is possible these effects may still be present, however, the developers of the EAT have attempted to lessen these response effects. Shaw and Garfinkel (1990:550) suggest that the development of such scales as the EAT, which assess and quantify many of the features of eating disorders, have "aided the field by attempting to consider cognitive style factors such as social desirability, acquiescence and denial".
3.4  Study questions

The study employed the EAT and BSQ to obtain total scores and responses on particular individual items from both questionnaires. The questions relate to the objectives of the research which identify issues that help to describe the eating attitudes and body shape concerns experience in undergraduate university students.

3.4.1  Investigating the relationship between EAT and BSQ in female students

Individually, the EAT and BSQ provide important information about eating behaviours and attitudes as they relate to either anorexia nervosa and bulimia nervosa. Together, they provide a more complete view of the extent of pathological eating behaviours in a population and the degree to which the sample report bulimic or anorexic symptoms. The questionnaires assess a wide range of eating behaviours, eating attitudes, attitudes towards food, concerns about body shape and attitudes towards body shape.

It is also possible to investigate the relationship between the two instruments and make inferences about the consistency between the responses from the EAT and BSQ. The few studies that have used the BSQ have also used the EAT and have investigated the relationship between attitudes and eating behaviours. Hadigan and Walsh (1991) obtained self-report data from four groups: outpatients with bulimia nervosa, acquaintances of the patients, women with seasonal affective disorder, and normal controls. The BSQ was used
to measure body shape concerns and the EAT was used to detect “anorexic-like” behaviours and attitudes. The results showed a significant positive correlation between the BSQ and EAT and patients with high BSQ scores had significantly higher mean EAT scores. While the sample was not composed of university students, the significance of the results was that a relationship was found to exist between EAT and BSQ scores. Similar correlations were found between EAT and BSQ in a study by Bunnell et al. (1992). The sample consisted of adolescent eating disorder patients and a group of female high school students demographically similar to the clinical group. Hence, it is hypothesised that females in this study who score highly on the BSQ will also score highly on the EAT, thus showing that body shape concerns correlate with abnormal eating behaviours.

3.4.2 Examining the level of body shape concerns in female students

The BSQ was intended to assess body shape and weight concerns and feelings and attitudes about behaviours, such as laxative use and purging, frequently associated with bulimia nervosa. The scores, therefore, providing a measure of the extent to which bulimic tendencies are evident amongst the sample population. Research by Hadigan and Walsh (1991) found that mean BSQ scores in bulimia nervosa groups were more than two times higher than the normal control BSQ score. They concluded that these results support previous reports that an abnormal degree of concern about shape and weight is highly characteristic of patients with bulimia nervosa. Hence, the general use of the BSQ to detect possible cases of bulimia nervosa. Cooper et al. (1987) discuss in their report that it is valid to use the BSQ, as a means of investigating body shape concerns, in both anorexia
nervosa and bulimia nervosa groups. This is possible because of the fact that weight gain and body shape issues are essential features in both disorders but manifest themselves physically in two distinct ways. Individuals with bulimia may closely resemble those with anorexia nervosa in their fear of gaining weight, in their desire to lose weight, and in the level of dissatisfaction with their bodies (American Psychiatric Association, 1994). However, anorexia nervosa is characterised by rapid weight loss to the level of emaciation, whereas with bulimia, the individual is often a healthy weight but engages in a vicious cycle of bingeing and compensatory ways to control their weight, such as purging and using laxatives.

It is expected in this study that a varying degree of body shape concerns will be reported by female students. Research suggests that the prevalence of bulimia is increasing, thus, the frequency of female students reporting body shape concerns comparable to clinical cases of bulimia (scores greater than 140) is expected to be higher than cases comparable to anorexia nervosa (EAT scores). However, the frequency of female students displaying symptomatic body shape concerns, at levels comparable to sub-clinical bulimia, is expected to be much higher than predicted clinical cases.

3.4.3 Determining gender and cultural differences

The purpose for which both questionnaires were developed limits the questions that can be asked of the data. However, other variables investigated widen the scope for analysis and include age, sex, living arrangements, ethnicity, and faculty the participant is studying in.
A significant difference between EAT scores is expected to exist between the sexes. This is a firmly established fact in the literature on eating disorders (Abraham et al. 1983, Rosen et al. 1988, White, 1991). Females are diagnosed with eating disorders more often than males and are, therefore, expected to score highly on the EAT with a greater frequency than males.

The prevalence patterns for disordered eating behaviours, attitudes and body shape concerns of the sample group will be explored by testing for a significant difference between the demographic data on language and country of origin and EAT scores in males and females and BSQ scores in females. The total BSQ and the EAT scores will also be tested against faculty to determine if a difference in scores exists due to the nature of the particular area being studied.

3.4.4 Investigating specific anorexic and bulimic behaviours

The frequency of key disordered eating behaviours, ie. particular items from each questionnaire, will either provide further evidence or contradict past research into patterns of behaviours and attitudes amongst the sexes, and the sample, as a representation of the behaviours and attitudes of the wider university population. The particular EAT items relate to the attitude of weight gain, and the behaviours of dieting, exercising, bingeing, vomiting and laxative use. Exploration of these items will identify particular attitudes and behaviours which are most frequently observed in the sample and may compliment trends in total EAT scores. Likewise, analysis of particular BSQ items relating to attitudes about
body shape and weight gain, and behaviours of exercising, dieting, vomiting and using laxatives, will also further explore body shape concerns of students. It has been suggested in the literature that disordered eating behaviours are more prevalent than eating disorders themselves (Striegel-Moore et al. 1989, Bunnell et al. 1990). Hence, comparison of frequency scores on the particular items on both the EAT and BSQ should provide specific detail relating to the relationship between eating attitudes and behaviours.

There is some discussion necessary of the way in which the EAT has been applied in past studies. The intention of Garner and Garfinkel (1979) in developing the EAT was to use the questionnaire to screen for behaviours characteristic of anorexia nervosa. Although originally designed for anorexia nervosa (Levey et al. 1989), the EAT has been used by researchers in groups with bulimia nervosa (Post and Crowther, 1985, Hadigan and Walsh, 1991). It seems a contradiction in terms to measure anorexic behaviours in bulimic patients. The reason for this is that central features to bulimia nervosa are the episodes of bingeing and inappropriate compensatory methods to prevent weight gain (American Psychiatric Association, 1994). The EAT deals with bingeing and purging behaviours, laxative use, and concerns about body weight whereas the BSQ deals with all these issues, except bingeing, and covers body weight and shape in greater depth. Considering that there are two types of anorexia nervosa, the restricting and binge-eating/purging type, the EAT is more comprehensive and appropriate when measuring disordered eating behaviours, particularly bingeing. The BSQ was intended to measure behaviours, and more specifically, concerns of the subject. The closest concern related to bingeing on the BSQ is Item 23, which asks “have you thought that you are the shape you are because you lack self-
control?”. The BSQ could be considered inadequate in that it does not fully assess the concerns of a “potential” bulimia because it neglects to deal with the issue of bingeing. However, if the purpose of the research was to focus on behaviours, the EAT would be considered appropriate if used in a group of bulimic patients. Considering the apparent limitation of the BSQ in measuring all of the central features of bulimia, using the scores on the particular EAT and BSQ items to compare for consistency is essential to the validity of findings in the present study.

3.5 Coding for analysis

A limited number of items were chosen for coding because of the number of questionnaires (511), and the large number of items in each. The items coded included age, sex, faculty, country of birth, language spoken at home, form of accommodation, total EAT score, total BSQ score, six individual EAT items, and six individual BSQ items.

The particular EAT and BSQ items chosen for coding and analysis have a direct relationship to the criteria used to diagnose anorexia nervosa and bulimia nervosa. The items analysed are considered essential features of both eating disorders. As this study aims to investigate disordered eating behaviours and body shape concerns of students, identification of key eating behaviours and body shape concerns will produce the most meaningful and relevant data for discussion.
The EAT items which were coded were based on the diagnostic features of anorexia nervosa (American Psychiatric Association, 1994). Part of the definition of clinical anorexia includes an intense fear of gaining weight, which relates to item 4 - “am terrified about being overweight”, and a refusal to maintain normal body weight, which relates to the following items: item 16 - “exercise strenuously to burn off calories”, item 28 - “take laxatives” and item 37 - “engage in dieting behaviour”. In addition, as the DSM-IV specifies two specific types of anorexia nervosa, the restricting type and binge-eating/purging type, EAT items relating to these categories of anorexia were also coded. They were item 7 - “have gone on eating binges where I feel I may not be able to stop” and item 13 - “vomit after I have eaten”.

The same decisions were made regarding which BSQ items to code. The features of the diagnostic criteria for bulimia that could be measured by the BSQ were analysed. For a diagnosis of bulimia to be made the individual must report episodes of binge eating and the use of inappropriate compensatory methods to prevent weight gain, such as purging, excessive exercise, and misuse of laxatives. There is also required to be an excessive influence on self-evaluation by body shape and weight and feelings of shame about their general eating habits and body shape. In addition, there are also two specific types of bulimia nervosa, the purging type and non-purging type. BSQ items relating particularly to these areas were coded for further analysis. They include the following items:
Item 4 - Have you been afraid that you might become fat (or fatter)?

Item 20 - Have you felt ashamed of your body?

Item 21 - Has worry about your shape made you diet?

Item 26 - Have you vomited in order to feel thinner?

Item 32 - Have you taken laxatives in order to feel thinner?

Item 34 - Has worry about your shape made you feel you ought to exercise?

A summary of the diagnostic criteria for anorexia nervosa and bulimia nervosa is included in Appendix Four.

Individual items were given a numeric code according to the score for that particular item. EAT items were scored as 3, 2, 1, or 0, with 3 being the answer in the most anorexic direction and the adjacent responses scoring a 2 or 1. The three least anorexic responses were scored collectively as 0. BSQ items were scored as numbers between 1 and 6 depending on the response (1 = “never” and 6 = “always”). Coding scores for demographic data is included in Appendix Five.

JMP software for statistical visualisation, Version 3 (1994), was used for all statistical analysis. JMP is produced by SAS Institute Inc, SAS Campus Drive, Cary, USA.
CHAPTER FOUR

Results

4.1 The level of body shape concerns in female students

TABLE 4.1

Levels of concern about body shape of female students

<table>
<thead>
<tr>
<th>Levels of body shape concern</th>
<th>No. of females</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>little concern - &lt; 60</td>
<td>268</td>
<td>52.7%</td>
</tr>
<tr>
<td>mild concerns - 61-99</td>
<td>115</td>
<td>22.6%</td>
</tr>
<tr>
<td>moderate concerns - 100-139</td>
<td>85</td>
<td>16.7%</td>
</tr>
<tr>
<td>extreme concerns - &gt; 140</td>
<td>41</td>
<td>8.0%</td>
</tr>
</tbody>
</table>

The highest BSQ score was 183 and the lowest was 32. The mean BSQ score was 92.8.

The classification of the levels of concern about body shape was previously discussed in the chapter on methodology. Table 4.1 shows that a little over half of the sample females had a total BSQ score of 60 or below, indicating that they showed little concern about their body shape. Eight percent of sample females scored 140 (the cut-off score) or above, indicating that these female undergraduate students displayed a level of concern about their body shape paralleling that of a clinically diagnosed case of bulimia nervosa. Eighty-five (16.7 percent) and 115 (22.6 percent) females were categorised as having moderate or mild concerns about their body shape, respectively.
The BSQ measured body shape concerns and behaviours, or actions taken, as a consequence of an over concern about body shape. Particular BSQ items were chosen for analysis due to their relationship to diagnostic criteria for clinical bulimia. Two of the six particular BSQ items were attitudinal, e.g. “have you been afraid you might get fat?” (item 4) and “have you felt ashamed of your body?” (item 20). These items relate to the concerns of female respondents.

Table 4.2 contains the responses to both the attitudinal and behavioural BSQ items. Responses can be classified as falling into the “normal” range of behaviour or attitude, i.e. “sometimes”, “rarely”, and “never”, or into the progressively extreme bulimic response category, i.e. “often”, “very often”, or “always”. Table 4.2 indicates that twenty three percent of respondents were “always” afraid of getting fat or fatter and over half (53 percent) of the females in the sample were either “often”, “very often” or “always” afraid of getting fat. Considerably less females in the sample (27 percent) have felt ashamed of their body, with the majority of females, nearly three quarters, reporting that they were not ashamed of their body.

The behavioural items related to dieting, vomiting, taking laxatives, and exercising. Just under a quarter (24.2 percent) of females have worried to the bulimic extreme about their shape to go on a diet and 57 percent of females have worried about their shape, “often”, “very often”, or “always” enough to feel they ought to exercise. Only 1.2 percent of females reported “often” or “very often” taking laxatives to feel thinner. No females scored
on “always” and 98.5 percent reported “rarely” or “never” using laxatives. The largest percentage (90 percent) of the female sample have never vomited to feel thinner and 2.2 percent reported “often”, “very often”, or “always” vomiting to feel thinner. In fact, only one female “always” vomited to feel thinner.

The information in Table 4.2 appears to indicate that over half of the female sample have the attitude of being afraid of getting fat and over half the sample have exercised because of worry about their shape. Over three-quarters of females report in the normal range for other behaviours such as dieting, vomiting, and laxative use. In relation to these other behaviours, it appears that when sample females worry about their shape the most frequent course of action taken is to exercise.

**TABLE 4.2**

*Responses of female students (n=320) on six key BSQ items reflecting fear of weight gain, feelings about body shape and size, dieting, vomiting, laxative abuse and exercise*

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Always (n=17)</th>
<th>Very often (n=17)</th>
<th>Often (n=17)</th>
<th>Sometimes (n=17)</th>
<th>Rarely (n=17)</th>
<th>Never (n=17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4: Have you been afraid that you might get fat (or fatter)?</td>
<td>72 (23%)</td>
<td>43 (14%)</td>
<td>51 (16%)</td>
<td>85 (27%)</td>
<td>42 (13%)</td>
<td>17 (5%)</td>
</tr>
<tr>
<td>20: Have you felt ashamed of your body?</td>
<td>20 (6.4%)</td>
<td>35 (11%)</td>
<td>32 (10%)</td>
<td>77 (25%)</td>
<td>64 (20.5%)</td>
<td>84 (27%)</td>
</tr>
<tr>
<td>21: Has worry about your shape made you diet?</td>
<td>14 (4.5%)</td>
<td>29 (9.2%)</td>
<td>33 (10.5%)</td>
<td>79 (25.2%)</td>
<td>52 (16.6%)</td>
<td>104 (33%)</td>
</tr>
<tr>
<td>26: Have you vomited in order to feel thinner?</td>
<td>1 (0.3%)</td>
<td>2 (0.6%)</td>
<td>4 (1.3%)</td>
<td>12 (3.8%)</td>
<td>9 (2.8%)</td>
<td>283 (90%)</td>
</tr>
<tr>
<td>32: Have you taken laxatives in order to feel thinner?</td>
<td>-</td>
<td>1 (0.3%)</td>
<td>3 (0.9%)</td>
<td>2 (0.6%)</td>
<td>8 (2.5%)</td>
<td>306 (96%)</td>
</tr>
<tr>
<td>34: Has worry about your shape made you feel you ought to exercise?</td>
<td>69 (21.5%)</td>
<td>49 (15.3%)</td>
<td>65 (20.3%)</td>
<td>79 (25%)</td>
<td>31 (9.6%)</td>
<td>27 (8.4%)</td>
</tr>
</tbody>
</table>
4.2. Eating behaviours and attitudes in sample males and females

An EAT score of greater than 30 indicates a predicted case of anorexia nervosa. In this sample, 6.08 percent of females and 0.52 percent of males scored above this cut-off point. The mean EAT score for the entire sample was 11.7. The mean EAT score for males and females was 8.5 and 13.6, respectively. The difference between the sexes was found to be statistically significant using the ‘t’ test ($t = 6.4$, $p < 0.001$).

Particular EAT items were also chosen for their relationship to the diagnostic criteria for clinical anorexia. The only item pertaining to attitudes of respondents was “I am terrified of being overweight” (item 4). The other five items were related to behaviours, such as binge eating, vomiting, laxative use, exercising strenuously, and dieting. Responses of “often”, “very often”, and “always” were considered to be in the anorexic direction, whereas “sometimes”, “rarely”, and “never” are thought of as being the normal response.

Table 4.3 shows that on all EAT items, a greater percentage of females than males scored in the anorexic direction, i.e. “always”, “very often”, and “often”. Twenty-three percent of females were terrified to the anorexic extreme of being overweight compared to 39 percent who were not. Of the behavioural items, eleven percent engage in dieting behaviour and fifty-one percent responded within the normal range for this item. The majority of females (55 percent) did not engage in strenuous exercise to burn off calories compared to the 7.6 percent who reported this behaviour to an anorexic extreme. Very low numbers of females reported binge eating (2.8 percent) and taking laxatives (1.0 percent). Only 2 out of 320
females (0.4 percent) reported vomiting “very often” after eating. Thus, these behaviours were not adopted by most females (around 60 percent for the three items) in the sample when making efforts to control their weight.

Male responses to the attitude of being overweight were very much lower than females. Compared to 23 percent of females, only two percent of males responded in the anorexic direction for this item. Thirty-five percent of males scored in the normal range for this attitude. The difference between males and females is statistically significant using Pearson’s chi-square ($x^2 = 63.1, p < 0.001$). Compared to male responses on behavioural EAT items, males scored the highest total responses (4.8 percent) in the anorexic direction for “exercising strenuously to burn off calories”. Eating binges were less frequently reported (1.6 percent) and no male respondents reported using laxatives or vomiting after eating. Hence, these typically anorexic behaviours were not evident to the extent they were in females and the majority of the males sampled responded in the non-anorexic direction, ie. “sometimes”, “rarely”, and “never”. The differences between male and female responses on binge eating, vomiting, taking laxatives, and exercising strenuously were not statistically significant ($p > 0.2$ for all four items).

The only abnormal eating behaviour found to be statistically significant between males and females pertained to dieting behaviour ($x^2 = 16.2, p < 0.001$). Whilst 36 percent of males did not engage in dieting behaviour, 0.8 percent responded in the anorexic direction, compared to eleven percent of females. Thus, females in the sample report significantly
TABLE 4.3

Responses of male (n=191) and female (n=320) students on six key EAT items reflecting fear of weight gain, bingeing, vomiting, exercise, laxative abuse, and dieting behaviour

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Always 3</th>
<th>Very often 2</th>
<th>Often 1</th>
<th>Sometimes/rarely/never 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>4: I am terrified of being overweight</td>
<td>42 (8%)</td>
<td>42 (8%)</td>
<td>42 (8%)</td>
<td>378 (75%)</td>
</tr>
<tr>
<td>7: I have gone on eating binges where I feel that I may not be able to stop</td>
<td>2 (0.4%)</td>
<td>2 (0.4%)</td>
<td>5 (0.9%)</td>
<td>485 (96%)</td>
</tr>
<tr>
<td>13: I vomit after I have eaten</td>
<td>-</td>
<td>2 (0.4%)</td>
<td>2 (0.4%)</td>
<td>505 (99.6%)</td>
</tr>
<tr>
<td>16: I exercise strenuously to burn off calories</td>
<td>13 (2.5%)</td>
<td>8 (1.6%)</td>
<td>20 (3.9%)</td>
<td>445 (88%)</td>
</tr>
<tr>
<td>28: I take laxatives</td>
<td>1 (0.2%)</td>
<td>1 (0.2%)</td>
<td>1 (0.2%)</td>
<td>500 (99%)</td>
</tr>
<tr>
<td>37: I engage in dieting behaviour</td>
<td>9 (1.9%)</td>
<td>8 (1.6%)</td>
<td>20 (4%)</td>
<td>445 (88%)</td>
</tr>
</tbody>
</table>
more frequent attitudes of being terrified of weight gain and consequently engaging in dieting behaviour.

This is a similar trend found on BSQ responses for females. The greatest reported attitude characteristic of an eating disorder was fear of weight gain (items 4 on both questionnaires). There was a difference in the action taken as a consequence of this concern. BSQ responses indicate that females exercise more frequently, whereas female responses on the EAT suggest they engage in dieting behaviour. The difference could be attributed to the phrasing of items relating to exercise. The BSQ asks if respondents exercise due to concerns about body shape. The EAT asks respondents if they exercise to burn off calories. The two are related indirectly, i.e. one needs to burn calories to lose weight, but may be interpreted differently because of the phrasing. The next most frequent behaviour in the bulimic direction on the BSQ, behind exercising, is dieting. This suggests that diet and exercise are the two most frequently adopted behaviours for weight control, particularly in females. Males, whilst not reporting to be extremely concerned about being overweight, exercise more frequently than any of the other behaviours analysed on the EAT.
4.3 Distribution of EAT and BSQ scores according to faculty

**TABLE 4.4**

*Mean BSQ scores in each faculty*

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Number of females</th>
<th>Mean BSQ score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
<td>65</td>
<td>99.1</td>
</tr>
<tr>
<td>Commerce</td>
<td>48</td>
<td>100.8</td>
</tr>
<tr>
<td>Education</td>
<td>36</td>
<td>82.8</td>
</tr>
<tr>
<td>Engineering</td>
<td>11</td>
<td>83.0</td>
</tr>
<tr>
<td>Health and Behavioural Science</td>
<td>71</td>
<td>92.7</td>
</tr>
<tr>
<td>Informatics</td>
<td>18</td>
<td>72.9</td>
</tr>
<tr>
<td>Law</td>
<td>3</td>
<td>89.3</td>
</tr>
<tr>
<td>Science</td>
<td>47</td>
<td>94.9</td>
</tr>
<tr>
<td>Joint major</td>
<td>10</td>
<td>88.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>309</strong></td>
<td><strong>804.1</strong></td>
</tr>
</tbody>
</table>

**TABLE 4.5**

*Mean EAT scores in each faculty*

<table>
<thead>
<tr>
<th>Faculty</th>
<th>No. of respondents</th>
<th>Mean EAT score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
<td>84</td>
<td>13.7</td>
</tr>
<tr>
<td>Commerce</td>
<td>75</td>
<td>11.9</td>
</tr>
<tr>
<td>Education</td>
<td>46</td>
<td>12.2</td>
</tr>
<tr>
<td>Engineering</td>
<td>52</td>
<td>8.9</td>
</tr>
<tr>
<td>Health and Behavioural Science</td>
<td>87</td>
<td>13.0</td>
</tr>
<tr>
<td>Informatics</td>
<td>59</td>
<td>9.7</td>
</tr>
<tr>
<td>Law</td>
<td>3</td>
<td>21.3</td>
</tr>
<tr>
<td>Science</td>
<td>79</td>
<td>11.2</td>
</tr>
<tr>
<td>Joint major</td>
<td>22</td>
<td>9.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>507</strong></td>
<td><strong>111.7</strong></td>
</tr>
</tbody>
</table>
From the mean BSQ scores in Table 4.4, it would appear that, on average, females studying in the commerce and arts faculty have higher body shape concerns than females studying in other faculties. However, one-way ANOVA found no significant difference between mean BSQ scores across the faculties (F = 1.7, p = 0.094). Within each faculty there was wide variation in total BSQ scores.

Table 4.5 shows that the faculty with the highest mean EAT score was the Law faculty, followed by Arts, Health, Education, and Commerce. The lowest mean EAT scores were from the Informatics and Engineering faculties. A one-way ANOVA suggested that there were significant differences between the mean EAT scores of at least two of the faculties (F = 2.4, p = 0.015). However, a Tukey-Kramer test (which compares all possible pairs of means) indicated that there were no significant differences. This apparent contradiction arises because the one-way ANOVA actually tests whether any comparison of means is significant, not just pairwise comparisons of means.

Tables 4.4 and 4.5 reveal some interesting trends. Respondents from the Arts faculty scored the second highest mean EAT and BSQ score. The Health and Behavioural Science faculty also scored consistently high mean scores on both the EAT and BSQ. Engineering and Informatics faculties both scored consistently low mean EAT and BSQ scores. These trends can be explained by the differing proportions of males and females in each of the above faculties. A greater percentage of female than male respondents were represented in the Arts and Health faculties, whereas a greater percentage of male than female respondents
were represented in the Informatics and Engineering faculties. Thus, faculties with a greater number of females to males will report a greater frequency of disordered eating behaviours and attitudes as evidenced from the results previously discussed on gender differences in scores on EAT and BSQ and the respective individual items.

4.4 Cultural differences in body shape concerns and eating behaviours

TABLE 4.6

*Mean EAT and BSQ score for country of origin and language*

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Country of Origin</th>
<th>Language at home</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Australia</td>
<td>Overseas</td>
</tr>
<tr>
<td>Mean EAT score</td>
<td>11.9</td>
<td>10.5</td>
</tr>
<tr>
<td></td>
<td>11.6</td>
<td>13.1</td>
</tr>
<tr>
<td>Mean BSQ score</td>
<td>93.3</td>
<td>87.5</td>
</tr>
<tr>
<td>(females only)</td>
<td>92.4</td>
<td>101.5</td>
</tr>
</tbody>
</table>

The information in Table 4.6 suggests that the mean EAT score for English-speaking participants was 11.6 and the mean EAT score for participants from Non-English speaking backgrounds was 13.1. The mean EAT score for participants born in Australia was 11.9 and the mean EAT score for participants born overseas was 10.5. The mean BSQ scores for English-speaking females was 92.4 and the mean BSQ score for females from Non-English speaking backgrounds was 101.5.
Whilst in both cases the mean scores from the Non-English speaking background participants were higher, the difference between the mean scores was not found to be statistically significant using the ‘t’ test (t= 0.9 and 1.1 respectively, p > 0.1 for both).

The mean total BSQ score for sample females born in Australia and overseas was 93.3 and 87.5, respectively. Likewise, using the ‘t’ test, the difference between the means was not statistically significant (t= 0.7, p > 0.1).

The information on mean BSQ and EAT scores suggests that overseas, non-English speaking respondents report, on average, lower levels of body shape concerns and disordered eating behaviours than their Australian-born, English speaking counterparts.

The cultural classification of language and country of origin is perhaps not specific enough. It does not take into account the generation of respondent, eg. first or second generation. An individual could be Australian-born, or have lived in Australia for most of their life, yet still speak another language at home. The questionnaire did not permit the identification of first or second language spoken at home, thus the demographic information obtained originally may not have adequately described culture or ethnicity.

4.5 Correlation between body shape concerns and disordered eating behaviours

Bivariate analysis revealed a positive correlation (r = 0.6, p < 0.05) between total EAT and BSQ scores, that is as total BSQ scores increased so did total EAT scores. A high level of
concern about body shape was found to positively correlate with disordered eating behaviours and attitudes.

*Figure. 4.1 Scatter diagram showing the relationship between total EAT and BSQ scores.*

Figure 4.1 represents the scatter of respondents according to their scores on EAT and BSQ. The scatter illustrates it is generally true that as BSQ score increases so do EAT scores. A value of $r^2 = 0.36$ indicates that 36 percent of the variability in values of EAT can be explained by a knowledge of BSQ score.
CHAPTER FIVE

Discussion

The results from this study were generally consistent with trends reported from previous research on eating disorders (Clarke and Palmer, 1983, Hesse-Biber and Marino, 1989, Smead and Richert, 1990, Paxton and Sculthorpe, 1991). In the present study, 6.08 percent of females and 0.52 percent of males scored 30 or greater on the EAT, indicating these participants are reporting eating behaviours predictive of anorexia nervosa. These results are comparable to previous studies of university populations which also used the EAT, where the percentage of female respondents scoring above 30 ranged between nine and 13 percent (Garner and Garfinkel, 1979, Clarke and Palmer, 1983, Smead and Richert, 1990, Paxton and Sculthorpe, 1991). In previous studies, male respondents scoring above 30 were reported to be consistently lower, ranging from none to just over one percent (Clarke and Palmer, 1983, Smead and Richert, 1990). The percentage of females who scored above 30 on the EAT in the present study is slightly lower than other studies, whereas the percentage of males reporting behaviours predictive of clinical anorexia is within the range reported above. As expected from previous research (Hesse-Biber and Marino, 1989, Smead and Richert, 1990), females scored significantly higher on the EAT than male respondents with a mean score of 13.6 for females and 8.5 for males ($t = 6.4$, $p < 0.001$).

From analysing the frequency of individual BSQ and EAT items, it appears that the females in this sample are similar to other adolescent populations sampled (Crawford and Worsley,
1988, Leon et al., 1989, Rosen et al., 1990), where between one-half and two-thirds have gone on a diet or have increased exercise to lose weight or change the shape of their body.

In an attempt to describe the eating behaviours and attitudes of the university students in the sample more completely, individual items (4, 7, 13, 16, 28, 37) from the EAT, relating to fear of weight gain, binge eating, vomiting, strenuous exercise, taking laxatives, and dieting, and individual items (4, 20, 21, 26, 32, 34) from the BSQ, relating to attitudes about body shape, dieting, vomiting, taking laxatives, and exercising were chosen for further investigation.

The most frequent response of sample females (23 percent) in the anorexic direction was to the attitudinal EAT item, “terrified of being overweight”. This was followed by 11 percent of females responding in the anorexic direction on one of the five behavioural EAT items investigated, engaging in dieting behaviour. These findings appear consistent with reports of women, in particular, constantly dieting to eliminate the fear of gaining weight that is discouraged by the media, fashion and advertising industries through the perpetual portrayal of the slim ideal figure (Crawford and Worsley, 1988, O’Dea, 1995).

Frequency counts on the EAT (item 7) showed bingeing behaviour, characteristic of a clinical case of anorexia nervosa, to be relatively low. Around 2.6 percent of females reported going on eating binges where they feel they may be unable to stop. These results are very low compared to a survey of first and second year university students done in
Britain (Clarke and Palmer, 1983) in which 13.5 percent of females scored in the anorexic direction for the same EAT item. The results are also lower than bingeing rates reported by Striegel-Moore et al. (1989). Nine percent of American first year university students reported binge eating. These differences could be due to methodological, sampling or cultural bias. An alternative possibility could be that fewer students at the University of Wollongong display this behaviour and other behaviours which are not reported at similar rates in other studies. The latter possibility can be further supported by the lower numbers of respondents in the present study scoring above 30 on the EAT, than in other studies of university students previously discussed.

The frequency of using purging and laxatives as a method of weight control was also extremely low. Only one percent of females used laxatives and 0.4 percent purged after a meal. This is consistent with prevalence rates reported by Clarke and Palmer (1983) and Abraham and Llewellyn-Jones (1992). The former research reports purging to occur in no female respondents and laxatives to occur in 1.2 percent of females. The latter reports the prevalence of purging, or vomiting, and laxative use in females to be three percent and between one and five percent, respectively. However, some studies report rates of purging as high as 22 percent (Post and Crowther, 1985, Fabian and Thompson, 1989). This is more than likely due to these studies using different survey methods and clinical samples. There was no statistically significant difference between the frequency of male and female responses on items relating to binge eating, vomiting, strenuous exercise, and taking
laxatives. It appears from these results that females who have an attitude of being terrified of weight gain will use dieting, followed by exercise, to control weight.

It was expected that males would not report abnormal eating attitudes and behaviours to the levels reported by females in the sample. Male responses on the individual EAT items confirmed this expectation. Two percent of males reported abnormally for the attitude of "terrified of being overweight" compared to twenty-three percent of females. This difference was statistically significant ($x^2 = 63.1$, $p< 0.001$). A similar situation was observed on the behavioural EAT items. Only 0.8 percent of males responded in the anorexic direction for engaging in dieting behaviour compared to 11 percent of females with the difference also being statistically significant ($x^2 = 16.2$, $p< 0.001$). Frequency counts on the EAT (item 7) showed bingeing behaviour to be very low in males (1.6 percent), as was the frequency of using purging and laxatives as a method of weight control. In fact, no males reported purging or using laxatives to the extent displayed by an individual with anorexia. There was no clear relationship observed in males between anorexic attitudes and behaviours as there was in the sample females.

It is interesting to note that the most frequent anorexic behaviour reported by males was "exercising strenuously to burn off calories". Whilst there were only a small percentage of total male responses in the anorexic direction, strenuous exercise appeared to be the most used method, of the methods investigated, of weight control by males. This supports findings by Hoberman and Kroll-Mensing (1992) who discussed gender differences in rates
of eating disorders as being attributed to the different life concerns of adolescent boys and girls. Whilst girls reported worrying most about their figures and their weight, which helps to explain the higher rate of abnormal eating behaviours and attitudes of females in the present study, adolescent boys are more concerned about money and their looks. A good physical appearance for males incorporates a fit, toned body which is accomplished through various forms of exercise to “burn calories”.

The results from the total BSQ scores and the six particular BSQ items investigated revealed some similarities with results from the EAT, especially in relation to behaviours such as vomiting, laxative use, and such attitudes as fear of weight gain. As no studies using the BSQ on non-clinical university samples employed a cut-off score, the results from the present study cannot be compared on this basis. To examine the level of body shape concerns in female students, BSQ scores were classified into one of four categories, ie. little concern, mild concern, moderate concern, and extreme concern about body shape. Eight percent of sample females fell into the “extreme” category, that is, their scores were greater than 140. Using this classification, just over half the sample had scores which indicated they showed little concern about the shape of their bodies. Nearly one-quarter of females report moderate or extreme concerns about their body shape. This is consistent with suggestions that the prevalence of women becoming dissatisfied with their body shape is increasing (Worsley and Crawford, 1988, Fabian and Thompson, 1989).

It is appropriate, however, to compare mean BSQ scores with other research. The mean BSQ score for the present study, which used a non-clinical sample, was 92.8. The original
validation study by Cooper et al. (1987) measured body shape concerns in a clinical group of bulimia patients and a group of women in the community, consisting of female university students, occupational therapy students, and family planning clinic attenders. The mean BSQ score for the community group compared with the patient group was 81.5 versus 136.9, respectively. The mean BSQ score from the present study is, thus, slightly higher than the BSQ score of the community sample. This could be due to the greater number of university females sampled in the present study opposed to the 85 female university students Cooper et al. (1987) sampled, who are documented to have higher concerns about their body shape and abnormal eating behaviours. A more useful comparison would be that of the BSQ scores of the university students, which were grouped into "women in the community", and the BSQ score in the present study. As Cooper et al. (1987) did not analyse the total BSQ scores for each group within the community sample, this is not possible.

The mean total BSQ score in the present study (92.8) is also higher than the mean BSQ score from the non-clinical group (64.6) in the study by Hadigan and Walsh (1991). Again, this could be accounted for by the fact that the sample in the present study is comprised of university students with a mean age of 18 and the control group in the latter study is comprised of normal weight females who were interested in participating and had a mean age of 25 years. It is possible that BSQ score is related to age (Hadigan and Walsh, 1991) and, thus, a difference would be expected. The study by Bunnell et al. (1992) found comparable results to the present study. The sample group in the research by Bunnell et al.
(1992) was comprised of female high school students, mean age of 15 years. The mean BSQ score of this group was 91.8. This may suggest that female high school students and first-year university students experience a similar level of concern about their body shape. A major preoccupation with body shape appears to be evident in sample females from the responses on the individual BSQ items in the present study. Over half of the females were either “often”, “very often”, or “always” afraid of getting fat. Nearly one-quarter of females have worried to the same bulimic extreme about their shape to go on a diet and the greater majority of females (57 percent) have exercised because of concerns about their body shape. The only items which had a greater percentage of responses in the anorexic direction than in the “normal” direction were being afraid of weight gain and exercising due to worry about body shape.

A relationship is evident between the attitudes and behaviours measured on the BSQ. It appears that females who report a fear of getting fat, to the levels characteristic of clinical bulimia, consequently adopt exercise and dieting behaviours. This relationship was observed with female responses on the EAT pertaining to weight gain, dieting and exercise. Responses on the EAT uncovered lower prevalence rates of vomiting and taking laxatives than reported in the literature. This is further supported by responses on the BSQ relating to similar items. The numbers of females in the present study vomiting or using laxatives as weight control methods to the level characteristic of a clinical case of bulimia is very low (2.2 percent and 1.2 percent, respectively).
Males enrolled in Commerce, Informatics, and Arts were under-represented in the study sample, which may bias some comparisons. Females were generally well represented across all faculties. There were no statistically significant differences between faculties on total EAT or BSQ scores ($p > 0.05$ for both). This could be due to the under representation by at least three of the faculties. Despite this statistical insignificance, it is interesting to note that the highest mean EAT score was in the Law faculty, followed by Arts and Health. The lowest mean EAT scores were from the Informatics and Engineering faculties. These observed differences could be due to the higher percentage of females compared to males in the Law, Arts, and Health faculties. The faculties with the lowest mean EAT scores have a higher percentage of male students. The fact that females are more likely to score higher on the EAT may account for the differences. It was expected that students from Health and Behavioural Science would have a significantly higher EAT and BSQ score due to the representation of nutrition students. Other studies have found that the prevalence of eating disorders and abnormal eating behaviours, such as vomiting after overeating, in nutrition and dietetic majors is higher than in other female student populations (Crockett and Littrell, 1985, Drake, 1989, Johnston and Christopher, 1991). However, respondents from this faculty, as well as commerce, returned fewer than expected questionnaires.

No detailed discussion of cultural or ethnic differences is possible in the study for two reasons. Firstly, the study sample was under represented by non-English speaking respondents, possibly due to the cultural bias of the survey instruments. This is unfortunate considering the little information that exists on cultural differences in eating disorders. It is
possible that non-English speaking students may not have understood the questionnaire or its purpose. Alternatively, considering that the prevalence of eating disorders in cultures that are non-industrialised is documented to be much lower than in western countries (Rosen et al., 1988, Dolan and Ford, 1991), individuals from certain cultures may have found the questionnaire irrelevant. Secondly, the differences in mean total EAT and BSQ scores were not statistically significant for country of origin and language spoken at home. Although other studies have found a lower prevalence of eating disorders in certain non-industrialised cultures (Dolan, 1991, McCallum, 1993), there was no evidence of this in the present study.

Only female students completed the BSQ because the questionnaire has only been validated for use on females in the past (Cooper et al. 1987, Hadigan and Walsh, 1991). Establishing a relationship between BSQ and EAT scores was possible only in sample females and as such, findings are only generalisable to females. The results showed a significant positive correlation between total EAT and BSQ scores ($r = 0.6$, $p < 0.001$). In the sample of female university students there was a relationship between a high level of body shape concerns and a high rate of reporting abnormal eating behaviours. The relationship between concerns and behaviours was evident to some extent in female responses on particular EAT and BSQ items regarding fear of weight gain, dieting, and exercise, as previously discussed. No obvious association was apparent from observing the frequency of male responses on the particular EAT items. The percentage of females scoring above the cut-off points for EAT (six percent) and BSQ (eight percent) are compatible with research by King (1989).
who estimated that between three and five per cent of female university students will exhibit some of the subclinical behavioural and attitudinal symptoms of eating disorders.

5.1 **Limitations of the study**

There are several limitations of this study which are mostly related to sampling and methodological issues. Firstly, certain groups were under-represented. These were males, students from non-English speaking backgrounds, and certain faculties. Less males than expected returned surveys which should be considered when interpreting the results. Likewise, the number of non-English speaking respondents was very small which limits the statistical power to be able to make comparisons with this group. A second limitation was the type of questionnaire used and its design. The response rate was low. It is not unusual, however, for postal surveys to have a low response rate. Respondents complete and return the questionnaire using their own initiative and there is the chance of missing individuals who have changed address. There may also be problems with the reliability of self-reported data, especially in relation to eating disorders (Striegel-Moore et al. 1989). With eating disorders it is quite possible that true cases did not respond because of shame and guilt surrounding the eating behaviours of an individual with anorexia or bulimia, thus symptomatic behaviours of eating disorders may have been under-reported. In addition, questionnaires that ask respondents to best rate their behaviour or attitudes on a scale are providing subjective information. The interpretation of behaviours and attitudes and definition of words, such as “binge eating”, are subject to individual variation.
Finally, it has been suggested that over concern with shape and weight can best be assessed by a clinical interview. The methodology in the present study did not permit a formal clinical diagnosis to be made. The absence of a clinical interview leaves results open to speculation about true prevalence rates of eating disorders and their subclinical forms and differentiation between sub-clinical anorexia nervosa and sub-clinical bulimia nervosa in individuals displaying high levels of disordered eating and body shape concerns.
CHAPTER SIX

Conclusions

What has become apparent in the investigation of eating behaviours and body shape concerns is the consistency of findings with previous research and also between responses on the two questionnaires employed in the study, the Eating Attitudes Test and the Body Shape Questionnaire.

In general, disordered eating behaviours and body shape concerns in university students occurred at a comparatively higher level than other groups within the population and differed significantly between males and females ($t = 6.4$, $p < 0.001$). Female university students in the present study report body shape concerns at levels expected in university populations and higher than the concerns of the general population.

Students from Wollongong University reported a low frequency of inappropriate compensatory methods of weight control, i.e. vomiting and laxative use, on both the EAT and BSQ. They were also lower than prevalence rates for these behaviours reported in university students in other studies (Post and Crowther, 1985, Fabian and Thompson, 1989), yet were within the ranges reported in the general population (Abraham and Llewellyn-Jones, 1992). The percentage of females reporting eating behaviours and attitudes symptomatic of clinical anorexia was also lower than in other university
populations. This could indicate that these behaviours are not as widely evident in students from Wollongong University.

The relationship between disordered patterns of eating and concerns about body shape was established on two occasions. Responses on both the EAT and BSQ items suggested that fear of gaining weight is a major concern of females in particular and it appears that the behaviours females are more likely to adopt are dieting and exercise. It is important to remember that dieting is a broad term and can cover a number of behaviours depending on the individual’s definition. Total EAT and BSQ scores were found to be positively correlated with each other ($r = 0.6, p <0.05$). This suggests that as BSQ scores increase so do EAT scores. Thus, high concerns about one’s body shape can generally be associated with reports of abnormal eating behaviours.

The relationship between eating attitudes and behaviours was not apparent amongst university males. Males were consistent in reporting behaviours and attitudes, measured by the particular EAT items, within the normal range expected by the majority of the population. Of the methods of weight control investigated in this study, it was evident that males clearly preferred strenuous exercise over dieting, bingeing, purging or using laxatives. Whilst the definition of strenuous may have varied with different individuals, this is the least concerning method of all methods of weight control and if preventative education was warranted this may be one possible issue.
Total EAT and BSQ scores have indicated that Wollongong University students are comparable to the three to five percent of university students (King, 1989) found in other studies to exhibit behaviours and attitudes symptomatic of clinical eating disorders, as far as eating behaviours and attitudes about body shape are concerned. The effectiveness of education is a whole other study, but considering that 20 percent of women who display subclinical symptomatology are at risk of developing a clinical disorder (Cantrell and Ellis, 1991), initiatives perhaps should be considered.

Results of this study suggest that abnormal eating behaviours and attitudes, which implies the presence of subclinical eating disorders, are endemic at low levels in society, more specifically, in university populations, as suggested by Dolan and Ford (1991). The greater majority of university students, males and females, reported normal eating behaviours and attitudes. The females alone, produced a similar trend, except for the attitude of being afraid of getting fat and the behaviour of exercising due to concerns about body shape. Here, the problem is not so much that the females are exercising, in fact this is probably the most commendable method of weight control. The problem is the reason for the behaviour; the attitude of fearing weight gain, as this study has shown that excessive body shape concerns are related to reporting abnormal eating behaviours. The suggestion that eating disorders are reaching epidemic proportions (Kalucy, 1983, Dolan, 1991) is not supported by the present study. This seems an over-exaggeration, considering that the prevalence of predicted clinical cases of bulimia and anorexia in university students is documented to be
a lot higher than the general population, but occurred only in six to eight per cent of the students sampled.

6.1 Implications of research findings

* There were few past studies on which to make comparisons, but total BSQ scores and responses on particular BSQ items indicate that, for the quarter of the female students who report being moderately and extremely concerned about the shape of their body, and the 57 percent of females afraid of getting fat, education focussed on body image and self-acceptance could be appropriate.

* Consistency of results on the individual EAT and BSQ items and the positive relationship established between body shape concerns and abnormal eating behaviours further supports the need for female students, especially, to be educated on the dangers of certain dieting and disordered eating behaviours and safe and appropriate methods of weight control.

6.2 Recommendations for further research

* due to the under-representation of male students, it is recommended that for further study, males sent questionnaires are followed up to ensure the questionnaire is returned.
due to the under-representation of respondents from non-English speaking backgrounds it would be necessary, if a cross-cultural examination of the differences in eating disorders is the main objective in research, to provide interpretation of questionnaires and investigate the psychosomatic properties to ensure it is valid to apply questionnaires across other cultures (Dolan and Ford 1991).

to extend the methodology to incorporate assessment of the psychological state of participants or conduct clinical interviews on those who scored above cut-off points on EAT and BSQ, for example, to determine true prevalence rates of eating disorders and their subclinical forms.
REFERENCES


Bordo, S.(1988) Anorexia nervosa: psychopathology as the crystallization of culture, in
I. Diamond and L. Quinby (eds), *Feminism and Foucault: reflections on resistance*, Northeastern University Press, USA, p 87-117.


APPENDIX ONE

Demographic details of the questionnaire.

FOOD AND HEALTH SURVEY

1. AGE (in years) ___ years

2. SEX ___ male ___ female

3. FACULTY ___ Arts ___ Commerce ___ Education ___ Engineering ___ Health and Behavioural Science ___ Informatics ___ Law ___ Science

4. COUNTRY OF BIRTH __________________________
   If born overseas, year of arrival in Australia 19 ___

5. LANGUAGES SPOKEN AT HOME __________________________
   __________________________

6. IS THIS YOUR FIRST YEAR OF UNIVERSITY STUDY?
   ___ Yes ___ No

7. HAVE YOU TAKEN ANY OTHER STUDY SINCE LEAVING SCHOOL?
   ___ Yes ___ No

8. WHAT IS YOUR FORM OF ACCOMODATION?
   ___ Living with parents / guardians
   ___ living with other relatives
   ___ living with partner, without children
   ___ living with partner, with children
   ___ sharing with friends
   ___ University college
   ___ boarding with a family
   ___ living alone
   ___ other, please specify __________
Please place an (X) under the column which applies best to each of the numbered statements. All of the results will be strictly confidential. Most of the questions directly relate to food or eating, although other types of questions have been included. Please answer each question carefully. Thank you.

<table>
<thead>
<tr>
<th>Always</th>
<th>Very often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
</table>
| 1. Like eating with other people
| 2. Prepare foods for others but do not eat what 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 (eg 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
<table>
<thead>
<tr>
<th>Always</th>
<th>Very often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
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<td></td>
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<tr>
<td>19.</td>
<td>Enjoy eating meat</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>20.</td>
<td>Wake up early in the morning</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>21.</td>
<td>Eat the same foods day after day</td>
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<tr>
<td>22.</td>
<td>Think about burning up calories when I exercise</td>
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<td></td>
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<td></td>
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<tr>
<td>23.</td>
<td>Have regular menstrual periods</td>
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<tr>
<td>24.</td>
<td>Other people think that I am too thin</td>
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<tr>
<td>25.</td>
<td>Am preoccupied with the thought of having fat on my body</td>
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<td></td>
<td></td>
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<tr>
<td>26.</td>
<td>Take longer than others to eat my meals</td>
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<td></td>
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<tr>
<td>27.</td>
<td>Enjoy eating at restaurants</td>
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<td></td>
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<tr>
<td>28.</td>
<td>Take laxatives</td>
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<td></td>
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<tr>
<td>29.</td>
<td>Avoid foods with sugar in them</td>
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<tr>
<td>30.</td>
<td>Eat diet foods</td>
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<tr>
<td>31.</td>
<td>Feel that food controls my life</td>
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<td></td>
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<tr>
<td>32.</td>
<td>Display self control around food</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>33.</td>
<td>Feel that others pressure me to eat</td>
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<td></td>
<td></td>
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<tr>
<td>34.</td>
<td>Give too much time and thought to food</td>
<td></td>
<td></td>
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<tr>
<td>35.</td>
<td>Suffer from constipation</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>36.</td>
<td>Feel uncomfortable after eating sweets</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>37.</td>
<td>Engage in dieting behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>38.</td>
<td>Like my stomach to be empty</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>39.</td>
<td>Enjoy trying new rich foods</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40.</td>
<td>Have the impulse to vomit after meals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Body Shape Questionnaire (BSQ)

We would like to know how you have been feeling about your appearance over the PAST FOUR WEEKS. Please read each question and circle the appropriate number to the right. Please answer all the questions.

OVER THE PAST FOUR WEEKS:

<table>
<thead>
<tr>
<th>Question</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Has feeling bored made you brood about your shape?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2. Have you been so worried about your shape that you have been feeling that you ought to diet?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3. Have you thought that your thighs, hips or bottom are too large for the rest of you?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>4. Have you been afraid that you might become fat (or fatter)?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5. Have you worried about your flesh not being firm enough?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6. Has feeling full (eg after eating a large meal) made you feel fat?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7. Have you felt so bad about your shape that you have cried?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>8. Have you avoided running because your flesh might wobble?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9. Has being with thin women made you feel self-conscious about your shape?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>10. Have you worried about your thighs spreading out when sitting down?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>11. Has eating even a small amount of food made you feel fat?</td>
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<td>5</td>
<td>6</td>
</tr>
<tr>
<td>12. Have you noticed the shape of other women and felt that your own shape compared unfavourably?</td>
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<td>6</td>
</tr>
<tr>
<td>13. Has thinking about your shape interfered with your ability to concentrate (eg while watching television, reading, listening to conversations)?</td>
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<tr>
<td></td>
<td></td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Very Often</td>
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<tr>
<td>14.</td>
<td>Has being naked, such as when taking a bath, made you feel fat?</td>
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<td>2</td>
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<td>5</td>
</tr>
<tr>
<td>15.</td>
<td>Have you avoided wearing clothes which make you particularly aware of the shape of your body?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16.</td>
<td>Have you imagined cutting off fleshy areas of your body?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17.</td>
<td>Has eating sweets, cakes, or other high calorie foods made you feel fat?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.</td>
<td>Have you not gone out to social occasions (eg parties) because you have felt bad about your shape?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.</td>
<td>Have you felt excessively large and rounded?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.</td>
<td>Have you felt ashamed of your body?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21.</td>
<td>Has worry about your shape made you diet?</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>22.</td>
<td>Have you felt happiest about your shape when your stomach has been empty (eg in the morning)?</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>23.</td>
<td>Have you thought that you are the shape you are because you lack self-control?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24.</td>
<td>Have you worried about other people seeing rolls of flesh around your waist or stomach?</td>
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<td>2</td>
<td>3</td>
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<td>5</td>
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<tr>
<td>25.</td>
<td>Have you felt that it is not fair that other women are thinner than you?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>26.</td>
<td>Have you vomited in order to feel thinner?</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>5</td>
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<tr>
<td>27.</td>
<td>When in company have you worried about taking up too much room (eg sitting on a sofa or a bus seat)?</td>
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<td>2</td>
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<tr>
<td>28.</td>
<td>Have you worried about your flesh being dimply?</td>
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<tr>
<td>29. Has seeing your reflection (eg in a mirror or shop window) made you feel bad about your shape?</td>
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<td>2</td>
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<td>6</td>
</tr>
<tr>
<td>30. Have you pinched areas of your body to see how much fat there is?</td>
<td>1</td>
<td>2</td>
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<td>6</td>
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<tr>
<td>31. Have you avoided situations where people could see your body (eg communal changing rooms or swimming pools)?</td>
<td>1</td>
<td>2</td>
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<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>32. Have you taken laxatives in order to feel thinner?</td>
<td>1</td>
<td>2</td>
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<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>33. Have you been particularly self-conscious about your shape when in the company of other people?</td>
<td>1</td>
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<td>5</td>
<td>6</td>
</tr>
<tr>
<td>34. Has worry about your shape made you feel you ought to exercise?</td>
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</table>
APPENDIX FOUR

Summary of diagnostic criteria (DSM-IV) of Anorexia Nervosa and Bulimia Nervosa.

(Published by the American Psychiatric Association, 1994)

1. Anorexia Nervosa

(A) Refusal to maintain body weight at or above a minimally normal weight for age and height (eg. weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).

(B) Intense fear of gaining weight or becoming fat, even though underweight.

(C) Disturbance in the way in which one’s body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.

(D) In postmenarchal females, amenorrhoea, ie. the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhoea if her periods occur only following hormone, eg. oestrogen, administration).
Specify type:

**Restricting type:** during the current episode of Anorexia Nervosa, the person has not regularly engaged in binge-eating or purging behaviour (ie. self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

**Binge-eating/Purging type:** during the current episode of Anorexia Nervosa, the person has regularly engaged in binge-eating or purging behaviour (ie. self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

2. **Bulimia Nervosa**

   (A) recurrent episodes of binge eating. An episode of binge eating is characterised by both of the following:

   (i) eating, in a discrete period of time (eg. within any two-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances,

   (ii) a sense of lack of control over eating during the episode (eg. a feeling that one cannot stop eating or control what or how much one is eating).
(B) Recurrent inappropriate compensatory behaviour in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise.

(C) The binge eating and inappropriate compensatory behaviours both occur, on average, at least twice a week for three months.

(D) Self-evaluation is unduly influenced by body shape and weight.

(E) The disturbance does not occur exclusively during episodes of Anorexia Nervosa.

**Specify type:**

**Purging type:** during the current episode of Bulimia Nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

**Nonpurging type:** during the current episode of Bulimia Nervosa, the person has used other inappropriate compensatory behaviours, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.
APPENDIX FIVE

Coding scales for demographic information.

1. Student I.D. number

2. Age (years)

3. Sex

<table>
<thead>
<tr>
<th>Female</th>
<th>01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>02</td>
</tr>
</tbody>
</table>

4. Faculty of study

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
<td>01</td>
</tr>
<tr>
<td>Commerce</td>
<td>02</td>
</tr>
<tr>
<td>Education</td>
<td>03</td>
</tr>
<tr>
<td>Engineering</td>
<td>04</td>
</tr>
<tr>
<td>Health and Behavioural Science</td>
<td>05</td>
</tr>
<tr>
<td>Informatics</td>
<td>06</td>
</tr>
<tr>
<td>Law</td>
<td>07</td>
</tr>
<tr>
<td>Science</td>
<td>08</td>
</tr>
<tr>
<td>Joint major</td>
<td>09</td>
</tr>
</tbody>
</table>
5. Country of birth

Australia 01 Overseas 02

6. Language spoken at home

English 01 Non-English speaking 02

7. Form of accommodation

Parents/Guardian 01
Other relatives 02
Partner/no kids 03
Partner/kids 04
Friends 05
University college 06
Boarding with family 07
Alone 08
Other 09