

Eating Attitudes and Neurotic Symptoms in University Students

M. G. CLARKE and R. L. PALMER

Summary: A postal survey of male and female university students is reported, using the Eating Attitude Test (EAT) and the Crown Crisp Experiential Index (CCEI). Eleven per cent of the 156 female respondents but none of 120 males scored above 30 on the EAT, thereby declaring eating attitudes comparable to anorexic subjects. Of those interviewed, none fulfilled diagnostic criteria for anorexia nervosa, but half showed eating disorder of clinical severity. There was a clear association between high EAT scores and higher scores on all the subscales of the CCEI except the phobic scale. The results are discussed in relation to ideas about the possible origins of clinical eating disorders.

Eating disorders with neither major weight loss nor obesity have been identified and various names coined to describe them, including bulimarexia (Boskind-Lodahl, 1976), dietary chaos syndrome (Palmer, 1979), bulimia nervosa (Russell, 1979), binge eating syndrome (Wardle, 1980), sub-clinical anorexia nervosa (Button and Whitehouse, 1981), or, simply, bulimia (DSM III APA, 1980). Different authors have emphasized different aspects, but common central features are preoccupation with the control of weight and eating, and an alternation of restrained eating with binges of overeating, which may be followed by self-induced vomiting or abuse of laxatives. Clinically, many such cases seem to follow classical anorexia nervosa with marked weight loss, but some subjects undoubtedly arrive at this state without having been at an abnormally low weight. Such conditions arise against a background of widespread concern about weight and shape. For young women in particular, to be slim is to increase the chance of being thought or of thinking oneself attractive. Many seek slimness by constant dieting; some develop unusual attitudes to weight and eating and a few go on to present clinically significant disorders. The present study of a population of university students sets out to examine the frequency and associations of self-reported eating attitudes resembling those found in anorexia nervosa.

Method

The subjects of the investigation were male and female students in the first and second years at the University of Leicester. They were selected by taking every fifth name from the year and sex register of the Student Health Service. Third year students were avoided because it was anticipated that approaching

final examinations might lower their level of co-operation. The students were sent questionnaires through the post enquiring about their attitudes to weight and eating and about neurotic symptoms. The questionnaire incorporated two well-known instruments, namely the Eating Attitude Test (EAT) of Garner and Garfinkel (1979) and the Crown Crisp Experiential Index (CCEI), which was formerly known as the Middlesex Hospital Questionnaire (Crown and Crisp, 1966; Crown and Crisp, 1979). The students were asked also about their age, height, current weight and highest-ever weight; their current weight being compared with norms for their age and height (Society of Actuaries, 1959). The EAT is a 40-item Likert type self-rating instrument in which the respondent is asked to rate statements about attitudes and behaviour related to weight and eating. It was devised as a measure of the symptoms of anorexia nervosa. In the original study a cut-off score of 30 produced a good discrimination between anorexic and non-anorexic subjects, with few false negatives (Garner and Garfinkel, 1979). This cut-off was used in the present study.

The CCEI is, likewise, a self-rating questionnaire with 48 items relating to common neurotic symptoms and traits. It gives scores on six scales, namely anxiety (A), phobic anxiety (P), obsessiveness (O), somatic symptoms (S), depression (D) and hysteria (H). All the scales have some claim to validity except for the H scale, which seems to vary with age and extroversion rather than with hysterical symptoms or attributes (Crown and Crisp, 1979). The CCEI has been widely used and there are published figures for populations of anorexic subjects (Hsu and Crisp, 1980).

Subjects with scores above 30 on the EAT were

TABLE I

Relationship between EAT score groups and reported current weight relative to average weight for their age and height (n = 150)

| | Current weight | | |
|--------------------|-----------------|-----------------------|------------------|
| | ≤90% of average | Within 10% of average | ≥110% of average |
| Low EAT score ≤29 | 15 | 91 | 26 |
| High EAT score ≥30 | 1 | 13 | 4 |

Chi-squared = 0.66; not significant.

Six subjects failed to report their current weight.

TABLE II

Relationship between EAT score group and reported difference between current weight and highest ever weight (n = 148)

| | <14 lbs (6.5 kg) | >15 lbs (7 kg) |
|--------------------|------------------|----------------|
| Low EAT score ≤29 | 121 | 9 |
| High EAT score ≥30 | 12 | 6 |

Ten subjects failed to record both relevant weights.

Chi squared = 10.37; P < 0.01.

invited for interview, as were those scoring between 20 and 29 and anyone with a reported weight less than 10 per cent below published norms for their height and age. The study was carried out in collaboration with the Student Health Service, and respondents were asked to enclose a letter with their questionnaires if they felt that they wanted help for their problem. The students were assured of the confidentiality of the survey, but non-respondents were sent a second letter saying that an anonymous response was preferable to no response.

Results

Responses

Questionnaires were sent to 209 male and 206 female students. One hundred and twenty males (57 per cent) and 156 females (76 per cent) returned them. None of the male students scored 30 or more on the EAT and they were excluded from further study. The mean age of the female respondents was (19.2±0.8 years). Eighteen (11.5 per cent) of the female respondents scored 30 or more, and thereby declared attitudes to weight and eating comparable to those of anorexic patients. They form the main subjects of the investigation. A further seven women (4.5 per cent) scored in the borderline 20–29 range on the EAT. Eighty-nine subjects (57 per cent) scored 9 or less.

EAT scores and self-reported weight

One hundred and fifty (96 per cent) of the female respondents reported their current weight. Thirteen of the eighteen high EAT scoring subjects reported their

weight as being within 10 per cent of the norm for their height and age. Four subjects were overweight and only one was underweight. There was no significant relationship between current weight status and high EAT score (see Table I). However, those subjects who reported a highest ever weight which was over a stone (14 lbs or 6.5 kg) above their current weight were significantly more likely to have elevated EAT scores (see Table II). Of these subjects, those with low EAT scores tended to be currently overweight (five out of nine) but of the six high EAT scores half were currently at a normal weight and one was 10 per cent below her expected weight.

EAT scores and self-reported neurotic symptom status

Table III shows the mean scores for high and low EAT scores, and indicates comparison figures for an anorexic population before treatment and at follow-up, as reported by Hsu and Crisp (1980). High EAT scorers had significantly raised scores on all the CCEI subscales except the phobic scale when compared with the other students.

The high EAT scoring students resembled anorexics before treatment on the A, O and S scales, but scored significantly higher on the P and H scales and lower on the D scale. Compared with anorexics at follow-up, the high EAT scoring group produced significantly higher scores on the A, P and H scales.

EAT items

Certain items on the EAT were examined separately to gain an estimate of the prevalence of particular behaviours and attitudes. Table IV shows the rate of response to items concerning bingeing (item 7), laxative use (item 28), vomiting (item 13) and the impulse to vomit (item 40). The relationship between bingeing and restrained eating was examined by comparing scorers and non-scorers on the bingeing question with respect to their scores on certain dieting questions, (see Table V).

There was evidence of a significant relationship between bingeing (item 7) and avoiding eating when hungry (item 5), avoiding carbohydrates (item 10) and

diETING behaviour (item 37), but not for the more ambiguous question about self-control (item 32).

Interview data

The interviews were conducted by one of us (M.G.C.) in the Student Health Centre. Each interview lasted around one hour and was semi-structured. Questions concerned dieting and eating behaviour, mental state, social history, and adjustment and attitudes to therapy. Height, weight and responses on the EAT were also checked.

Of the 18 females who scored 30 or more on the EAT, 11 (61 per cent) attended for interview. Compared with attenders, non-attenders had similar EAT scores but tended to have higher CCEI scores. One high EAT scorer seemed to have no abnormal eating attitudes, and had completed the questionnaire casually giving a misleading high score. Of the remaining 10, five had previous histories suggestive of anorexia nervosa with significant weight loss, weight

phobia and in four cases amenorrhoea. Three had some persisting preoccupation with dieting but had overcome the severe phase and did not seem to need treatment. Another was 10 per cent below an average weight whilst remaining convinced that she was fat, although she regarded herself as being in control. The fifth had become overweight, partially to induce menstruation. She binged, dieted vigorously, and was depressed but declined help. The five who had not been underweight tended to overeat when they were low spirited. All five controlled their weight by dieting, but only one abused laxatives and one vomited to control her weight. Three others had considered vomiting, but had neither tried nor persisted.

For those 10 high scoring subjects who were interviewed the duration of preoccupation with eating varied from one year to 10 years. Their attitude to professional help was generally negative. Only three had discussed their problem with a general practitioner. Five were assessed as being currently in need

TABLE III

Comparison of CCEI scale means for high and low EAT subjects together with published means for anorexic subjects before treatment and at follow-up 4 years or more later (Hsu and Crisp, 1980)

| CCEI scale | Low EAT students (≤ 29) (n = 137) | | | High EAT students (≥ 30) (n = 17) | | Anorexics before treatment (n = 55) | | | Anorexics at follow-up (n = 55) | | |
|------------|---|------|-----------------------------------|---|------|--|-----|--|------------------------------------|-----|--|
| | Mean | SD | t for comparison high and low EAT | Mean | SD | Mean | SD | t for comparison High EAT and anorexics before treatment | Mean | SD | t for comparison of High EAT with anorexics at follow-up |
| A | 6.6 | 3.74 | 3.10** | 9.82 | 3.99 | 8.2 | 4.2 | 1.44 | 7.5 | 4.5 | 2.03* |
| P | 4.07 | 2.75 | .1.82 | 5.53 | 3.16 | 3.8 | 3.0 | 2.00* | 3.6 | 3.3 | 2.18* |
| O | 5.56 | 3.28 | 4.52** | 9.18 | 3.09 | 8.3 | 3.7 | 0.98 | 7.9 | 4.1 | 1.37 |
| S | 3.29 | 2.46 | 2.31* | 5.00 | 2.92 | 6.0 | 3.9 | 1.13 | 3.5 | 3.6 | 1.75 |
| D | 3.52 | 2.42 | 3.19** | 5.53 | 2.45 | 7.2 | 3.6 | 2.18* | 5.7 | 3.7 | 0.22 |
| H | 6.96 | 3.53 | 3.55** | 9.65 | 2.87 | 6.3 | 3.9 | 3.84** | 5.5 | 3.6 | 4.89** |

Probability levels: * $P < 0.5$.
** $P < 0.01$.

TABLE IV

Responses of female students on four key EAT items reflecting bingeing, vomiting and laxative abuse

| | Never 000 | Rarely 00 | Sometimes 0 | Often 1 | Very often 2 | Always 3 |
|--|--------------|--------------|----------------|------------|-----------------|-------------|
| Item 7: I have gone on eating binges where I feel that I may not be able to stop | 84 (53.8%) | 25 (16.0%) | 26 (16.7%) | 10 (6.4%) | 9 (5.8%) | 2 (1.3%) |
| Item 13: I vomit after I have eaten | 147 (94.2%) | 7 (4.5%) | 2 (1.3%) | | | |
| Item 28: I take laxatives | 135 (87.1%) | 9 (5.8%) | 9 (5.8%) | 1 (0.6%) | | 1 (0.6%) |
| Item 40: I have the impulse to vomit after meals | 134 (85.9%) | 14 (9.0%) | 7 (4.5%) | 1 (0.6%) | | |

One subject failed to complete Item 28.

TABLE V

Comparison of students scoring negatively and positively for bingeing (Item 7) on the EAT with respect to items concerned with dietary restraint

| | Non-bingers (Scores 000, 00 or 0 on Item 7) (n = 135) | Bingers (Scores 1, 2 or 3 on Item 7) (n = 21) | |
|--|---|---|--|
| Item 5 | | | |
| I avoid eating when I am hungry (Negative scores 000, 00, 0) | 130 | 17 | Chi-squared = 10.65 P < 0.01 |
| (Positive scores 1, 2, 3) | 5 | 4 | |
| Item 10 | | | |
| I particularly avoid foods with a high carbohydrate content (Negative scores 000, 00, 0) | 112 | 13 | Chi-squared = 5.68 P < 0.02 |
| (Positive scores 1, 2, 3) | 23 | 8 | |
| Item 32 | | | |
| I display self control around food (Negative scores 000, 00, 0) | 98 | 15 | Chi-squared = 0 P = not significant |
| (Positive scores 1, 2, 3) | 37 | 5 | |
| Item 37 | | | |
| I engage in dieting behaviour (Negative scores 000, 00, 0) | 119 | 8 | Chi-squared = 28.99 P < 0.0001 |
| (Positive scores 1, 2, 3) | 16 | 13 | |

One subject had failed to complete item 32, and hence was omitted from that analysis.

of help but two disagreed. This assessment was based on the presence of bulimia with fear of loss of control (four subjects), associated with current vomiting (one case) and overt distress (two cases). The fifth student felt that she could control her eating but perceived herself as fat despite being 10 per cent below the average weight for her height.

Little information was gained from the other interviews. Only three of the seven subjects with borderline EAT scores (20–29) attended. Two of these seemed to have no eating problems and the third expressed some desire to be slimmer and reported minor binges. Of the fourteen subjects with a reported weight of 10 per cent or more below average, only three attended for interview. Of these, two were discovered to have a body weight within the normal range.

Discussion

There are limitations to the utility of postal surveys. However, it may be assumed that the subjects of the present study understood its nature and there is little to suggest that most respondents failed to take the matter seriously. Amongst females the response rate was 76 per cent. However, it is possible or even likely that students with odd eating attitudes or even clinical disorder may have chosen disproportionately not to respond. Therefore, estimates of the prevalence of

such attitudes and disorders derived from the study are likely to be lower than the true figure.

About 11 per cent of the female respondents scored 30 or more on the EAT, thereby declaring themselves similar in this respect to clinical anorexic subjects (Garner and Garfinkel, 1979). At least one other survey using the EAT has produced comparable results. Button and Whitehouse (1981) examined students at a College of Technology and used a revised cut-off score of 32 on the EAT to define their high scoring group; just over 6 per cent of their female population exceeded that score. As in the present study there were no high scoring male students. In their original study Garner and Garfinkel (1979) found that about 13 per cent of their 'normal' non-anorexic comparison group scored 30 or more. Likewise, in other studies by the same authors (Garner and Garfinkel, 1980) about 9 per cent of female Canadian university and music students scored 30 or above on the EAT, although none was anorexic; 29 per cent of dance students and 27 per cent of modelling students were high scorers without fulfilling diagnostic criteria for anorexia nervosa, although in these populations there were, in addition, high rates of actual clinical disorder. Anorexic subjects tend to score well above 30. In the original study, the anorexic group had a mean score of nearly 60 (Garner and Garfinkel, 1979). It seems that individuals with declared clinical

anorexia nervosa regularly score highly on the EAT, but that many other young women, but not men, also score above 30 without having the disorder. In the present study, there was no clear relationship of EAT score with reported body weight, although interestingly those students who had at some stage in their life weighed considerably more than their current weight were more likely to produce high EAT scores. Some of these subjects were undoubtedly haunted by the possibility of being obese and this preoccupation was confirmed in those subjects who were interviewed. None of these students currently fulfilled diagnostic criteria for anorexia nervosa. Did they fit the pattern of bulimia (DSM III, 1980), bulimia nervosa (Russell, 1979), or the dietary chaos syndrome (Palmer, 1979)? Without absolute criteria such as weight change and amenorrhoea, the attempts to define a clinical eating disorder at normal weight have had difficulties in setting precise boundaries. Amongst the 11 subjects interviewed only five were thought to show disorders of clinical severity. None of these subjects were severely disordered, and only one admitted to self-induced vomiting and another to laxative abuse. This gives a minimum prevalence of about 3 per cent for clinical eating disorder amongst the respondents. The actual prevalence may well be higher, although examination of key items on the EAT did not support the view that vomiting and laxative abuse were widespread behaviours.

Button and Whitehouse (1981) reported that 12 (39 per cent) of their high EAT scoring students admitted to self-induced vomiting and six (18 per cent) admitted to laxative abuse. These figures represent 2.7 per cent and 1.4 per cent, respectively, of the 446 female respondents in their study. They suggest that about 5 per cent of their population could be said to suffer from subclinical anorexia nervosa, which is their chosen term for eating disorder which fails to fulfil strict diagnostic criteria for anorexia nervosa but nevertheless seems to be significant and more than normal dieting. Within the limits of their methods, the present study and that of Button and Whitehouse (1981) have produced broadly similar results. In both populations of students a substantial minority of females (6–11 per cent) but not males, reported abnormal eating attitudes, and some but not all of these had a disorder resembling that of women who present clinically. These results contrast with the findings of Halmi *et al* (1981). Their study was of 'summer session registrants at a suburban liberal arts campus of the State University of New York'. Among the female students studied, nearly 12 per cent reported self-induced vomiting. Laxative abuse was less common, but Halmi and her colleagues concluded on the basis of self-report questionnaires that the prevalence of the

bulimia syndrome, as defined in DSM III, may have been as high as 13 per cent in the population which they studied. Their subjects were not interviewed and they were therefore not in a position to make clinical judgements.

High EAT scoring female students had elevated scores on the CCEI when compared with their lower scoring peers. The difference was statistically significant in all cases with the exception of the phobic scale (P). Garner and Garfinkel (1980) found a positive correlation between EAT score and self-reported psychological symptoms in their dance students and anorexic subjects, but not amongst the normal controls. They used the Hopkins Symptom Checklist. The high EAT scorers in the present study resembled anorexics before treatment on three scales (A, O and S) and differed significantly on the others (P, D and H). Compared with anorexics at follow-up, the high EAT scoring students had significantly higher CCEI scores on three scales (A, P and H).

It seems that there is a clear association between self reports of abnormal eating attitudes and self reports of psychoneurotic symptoms and that the magnitude of the psychological symptomatology reported by these students resembles that found in clinical samples of anorexic subjects (Hsu and Crisp, 1980). It would seem, however, that the neurotic symptoms reflected in CCEI scores are non-specific. The present data can throw little light upon the nature of the association. However, the interviews tended to confirm the idea that for many of the high scoring subjects the issue of weight and its control was entangled with wider personal dilemmas and conflicts of a kind which might be expected to be associated with neurotic suffering.

Nisbett (1972) has put forward the view that for most people body weight tends to regulate around a certain level, and that sustained limitation of intake to a degree which overcomes the regulatory mechanism is required if an individual is to maintain a lower weight. Herman and Mack (1975) have introduced the useful concept of restrained eating and demonstrated that under laboratory conditions restrained subjects tend to overeat once they have started eating—a phenomenon which has been called counterregulation. Furthermore, Wardle (1980) has shown a positive relationship between dietary restraint and self-defined binges in a population of medical students. The pattern would seem to have its extreme case in the bingeing anorexic. In the present population a positive relationship has been demonstrated between binge eating, as declared on EAT item 7 ('I have gone on eating binges where I feel that I may not be able to stop') and items 5, 10 and 27, which concern aspects of dieting and restrained eating. A positive relationship between bingeing and item 32 ('I display self control around food') was not

demonstrated, but it is likely that subjects who were both dieting and bingeing would find this item difficult to rate. These data provide some further support for the association between dietary restraint and binge eating. However, the nature of the relationship is open to several interpretations. Clinical and research evidence tends to support the view that dietary restraint precedes bingeing rather than the reverse, but the present study cannot add anything to this issue.

It is possible to speculate about the links between dieting, counterregulation, bingeing, neurotic disorder and clinical eating problems. It seems plausible that personally insecure and neurotically troubled young women may tend to overvalue appearance and weight and attempt to manipulate it by dieting with unusual vigour. In doing so they are responding to current ideas of what is desirable. Males are less subject to this particular set of pressures and certainly diet much less. Such restrained eating may then increase the probability of impulses to overeat, which in turn could worsen the person's sense of insecurity and lack of personal control. Such a sequence of events might produce a resonance between eating and wider emotional issues and give entry to a truly vicious circle. The individual's response to the developing trap may determine whether the outcome is recovery, anorexia nervosa or bulimia. Whilst other psychological, social or biological factors may contribute to the establishment and maintenance of the fully fledged disorders, it is possible that the sequence described above could be a common initial pathway into difficulty.

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References

- AMERICAN PSYCHIATRIC ASSOCIATION (1980) *DSM-III. Diagnostic and Statistical Manual of Mental Disorders* (Third Edition). Washington D. C.
- BOSKIND-LODAHL, M. (1976) Cinderella's stepsisters: a feminist perspective on anorexia nervosa and bulimia. *Signs: Journal of Women in Culture and Society*, **2**, 342-56.
- BUTTON, E. J. & WHITEHOUSE, A. (1981) Subclinical anorexia nervosa. *Psychological Medicine*, **11**, 509-16.
- CROWN, S. & CRISP, A. H. (1966) A short clinical diagnostic self rating scale for psychoneurotic patients. *British Journal of Psychiatry*, **112**, 917-23.
- (1979) *Manual of the Crown-Crisp Experiential Index*. London: Hodder and Stoughton.
- GARNER, D. M. & GARFINKEL, P. E. (1979) The Eating Attitudes Test: an index of the symptoms of anorexia nervosa. *Psychological Medicine*, **9**, 273-9.
- (1980) Socio-cultural factors in the development of anorexia nervosa. *Psychological Medicine*, **10**, 647-56.
- HALMI, K. A., FALK, J. R. & SCHWARTZ, E. (1981) Binge eating and vomiting: a survey of a college population. *Psychological Medicine*, **11**, 697-706.
- HERMAN, C. B. & MACK, D. (1975) Restrained and unrestrained eating. *Journal of Personality*, **43**, 647-60.
- HSU, L. K. G. & CRISP, A. H. (1980) The Crown Crisp Experiential Index (CCEI) Profile in anorexia nervosa. *British Journal of Psychiatry*, **136**, 567-73.
- NISBETT, R. E. (1972) Hunger, obesity and the ventromedial hypothalamus. *Psychological Review*, **79**, 433-53.
- PALMER, R. L. (1979) The dietary chaos syndrome: a useful new term? *British Journal of Medical Psychology*, **52**, 187-90.
- RUSSELL, G. F. M. (1979) Bulimia nervosa: an ominous variant of anorexia nervosa. *Psychological Medicine*, **9**, 429-48.
- SOCIETY OF ACTUARIES (1959) *Build and Blood Pressure Study*.
- WARDLE, J. (1980) Dietary restraint and binge eating. *Behavioural Analysis and Modification*, **4**, 201-9.

M. G. Clarke, M.B., B.S., M.R.C.P., M.R.C.Psych., *Consultant Psychiatrist, Lister Hospital, Stevenage, Herts. Formerly Lecturer in Psychiatry, University of Leicester*

R. L. Palmer, M.B., B.S., M.R.C.Psych., *Senior Lecturer in Psychiatry, University of Leicester; Honorary Consultant Psychiatrist, Leicestershire Health Authority*

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