THE RESTORATION OF BODY WEIGHT IN ANOREXIA NERVOSA THROUGH OPERANT CONDITIONING: A CASE REPORT

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SYNOPSIS

This report illustrates a successful application of operant conditioning technique to restore normal eating pattern and hence body weight in a case of anorexia nerovsa. A total weight gain of 9.2 kg was achieved over a period of 8 weeks inpatient treatment, with an average gain of 1.15 kg per week. The importance of long term maintenance of weight gain and a two tiers treatment process for anorexia nervosa are discussed.

INTRODUCTION

Food rejecting behaviour in anorexia nervosa has been viewed by behaviourists as a specific learned behaviour which is reinforced by the attention it produces (1). However, some authors also noted that the withdrawal of attention may fail to modify anorexic behaviour (2). They therefore suggest that the disorder may represent a form of avoidance behaviour, rather than a form of positively reinforced behaviour. This formulation is similar to Crisp's term of 'weight phobia' (3) and also in line with the description of anorexia nervosa as a morbid fear of becoming fat (4).

Social learning theory, on the other hand, suggests that the refusal to eat may be employed as a manipulative tool for the control of family interaction. This of course does not exclude the possibility that anorexic behaviour could also be intermittently reinforced by the cultural premium on slimness, especially in the earlier phase of the disorder.

The above speculations about the aetiology of anorexia nervosa are, however, not conspicious in the literature (5), particularly in the reports of behavioural treatment programmes. In keeping with their orientation, behavioural therapists focus their attention almost exclusively on the design and implementation of effective intervention techniques.

In a recent report on seven anorexic patients in Singapore (6) their response to treatment were described but no detailed information on the treatment procedure was given. This case report describes and illustrates the application of operant treatment procedure to restoration of weight in an anorexic patient.

CASE REPORT

Miss A, 21-year-old college student, was brought in by her fiance who noted that she had lost a great deal of weight over the past 9 months. Of 1.74 m in height, Miss A's body weight had dropped from 60 kg to 49.7 kg, a total loss of 10.3 kg.

Recently, Miss A did a lot of exercise and jogged almost 10 km daily. Her fiance, Mr B, also noted that she was always inquiring if he thought she was overweight. Although Miss A did a lot of cooking for others, she seldom ate anything herself. She denied that she needed to eat any more than she did.

Miss A is the only child of her parents. Her father, a manager of a large tobacco company, is described as a strict person, who is rigid and not always able to listen to the view point of others. Miss A's mother is said to be a very anxious woman. Although Miss A is closer to her, she sometimes finds her mother difficult to talk to.

As a young child, Miss A recalled herself being a very 'good' daughter of her parents. She described herself as conscientious but not unduly fussy. However, she admitted that at times she gets irritated easily. She also said that she would long for novelty so that she would not get 'bored'. Apparently, she was reasonably successful at school and with friends. She has some close friends and still sees them. However, since attending university, she has been less close to her childhood friends.

Miss A knew Mr B for 11 months before their engagement in August 1982. Recently, there is some deterioration in their relationship. Miss A has ambivalent feelings about depending on him. Apparently her fiance has taken on the role of a guardian and constantly checks the amount of food eaten and exercise taken. He is generally much more anxious about the condition than Miss A. His anxiety has generated quite a barrier between them whereupon Miss A now finds it difficult to discuss many events with him.

Ten months ago, Miss A started feeling fat, sluggish, and unhappy about her appearance which prompted her to make a deliberate effort to lose weight. She first began a vegetarian diet and then increased markedly in the amount of exercise. Her insistence on running had reached a compulsive level. She would feel extremely guilty if she did not run her 10 km per day. She lost weight quickly and there was a very marked loss during last year around Christmas, with a subsequent slight increase to 49.7 kg when seen in the initial interview.

From the interview, several significant symptoms of anorexia nervosa were indicated. These symptoms include an inability to relax or keep still; high levels of activity; preoccupation with food and cooking for others; complaints of constipation; and some altered menstrual function. Miss A did not have obvious amnenorrhea probably because she was taking an oral contraceptive medication.

Miss A was reluctant to accept that her condition was in any way serious. She seemed to be somewhat nonchalant about her condition. Though she was reasonably accepting that further help was necessary, she rejected the suggestion of inpatient treatment. She was confident that she could gain weight with minimal outpatient support.

Miss A was then followed up by a psychiatrist and a social worker for individual psychotherapy, but this had not met with any success. In fact she lost another 2 kg, which brought her weight down to only 47.7 kg. This further weight loss made it impossible for Miss A to continue jogging. She found that she had lost a great deal of energy. She could not attend her classes because she had no strength to climb the stairs to the lecture hall. She felt constantly very tired and weak. When seen at the 4th session of psychotherapy, she was distressed and worried about her condition. At this stage, she finally agreed to be hospitalized for a period of inpatient treatment.

Treatment Programme

The treatment programme adopted the operant conditioning paradigm whereby weight gain, rather than food intake, was rewarded by privileges or access to activities desired by Miss A. A hierarchy of reward attainment was the inverse of reward preference, ie. the least desired being gained first. However, there was an exception, namely, receiving mail was scheduled earlier even though it was ranked more desirable than some activities (eg. sending mail). This arrangement was made so that Miss A would not be too deprived of social contact. Table 1 shows the order of rewards contigent on weight gain.

Goal weight was set at 58 kg. At the time when the programme was implemented, Miss A's weight was 47.0 kg. Though the normal weight range of a small frame woman of Miss A's height (1.74 m) is 59 kg — 63 kg. However, she was not agreeable in having the goal weight set above 58 kg.

The programme did not intend to specify how much weight gain Miss A should attain within a restricted time period. Rather, privileges would be given for every increase of 0.2 kg or 0.5 kg, irrespective of when the weight gain occurred. This was to avoid reinforcing compulsive eating behaviour and putting too great a stress on Miss A.

At the beginning of the programme, Miss A was put on complete bed rest in a single bedded room containing only essential furnishing. She was not allowed to get up except for going to bathroom or recording weight. This was necessary to enable her to conserve energy and thus gain weight more readily. Her daily weight was recorded in the morning before breakfast wearing a hospital gown. To facilitate self-reinforcement, a table showing the privileges and activities contingent on weight gain, and a graph showing the daily weight record were vividly displayed in her room.

No visitors were allowed until she weighted 51 kg. Contact with nursing and medical staff was deliberately minimized throughout the programme. Miss A was seen by the author together with other team members once a week to review her progress. No individual counselling sessions were to be given until her weight reached 50.5 kg.

Miss A was allowed to select her diet to some extent. A Dietician was consulted to ensure that her diet was

nutritionally balanced and a reasonable amount of carbohydrate was included.

The treatment programme was explained and discussed with Miss A, her parents and Mr B. A verbal contract was negotiated and it was made clear that the responsibility for weight gain rested mainly with Miss A. Cooperation from her parents and Mr B was secured.

Progress

During the initial phase of treatment, Miss A was apprehensive about having no visitor. She found staying still on the bed and doing nothing particularly difficult. She reported some physical complaints such as headache, feeling tired, nausea, and dizziness on standing. For the first two weeks, she gained only 0.7 kg. She was a little disappointed with her slow progress. It was explained to her that weight gain during the initial phase of the programme could be quite slow and that a graduai increase was indeed perfectly sound both medically and psychologically. Miss A asked to have a book instead of typing half an hour when she attained 49.8 kg. However she was told that she could have the book when she reaches 50.5 kg and she still could type for half an hour as she attained 49.8 kg. This arrangement served to convey to her that the programme was negotiable as long as she played her part.

Miss A was quite accepting of the restriction imposed by the treatment programme and she made great progress during the later phase of treatment which brought her weight up to 56.3 kg at the end of the 7th week. She was delighted with her weight gain and remained enthusiastic about the programme. Apart from her involvement at the Occupational Therapy Department, she also spent some time on knitting, reading and watching TV in the lounge. She slept well at night and had no complaint of headache, nausea, dizziness or other physical discomforts.

There was a drop of weight beginning of the 8th week, but followed by a slight increase that brought her weight up to 56.2 kg at the end of this week. After seeing herself in the video tape, she felt that her body size was just nice. At this stage, she was reluctant for further increase of weight and asked for discharge. As Miss A strongly opposed to continue with the programme, and also in the mean time two other anorexic patients who were in critical condition were urgently waiting for admission, it was therefore decided that she be seen as an outpatient. However, she would be reporting to the clinic weekly for weigh-in and follow up session over a period of 2 months. If she was able to maintain her weight, she would then be seen fortnightly for another 4 months. Thereafter, the following up treatment session would be slowly fade away over a period of 2 years.

Miss A understood that on discharge from the hospital, if her weight went below 55 kg for 2 consecutive weeks, she would be re-admitted to the hospital. The goal weight would then need to be 1 kg higher. Knowing that the temptation of not eating would be strong, she took this as a personal challenge.

Follow up

Although follow up family session had been planned, Miss A's parents were unwilling to come. They felt that since Miss A was with them now, it was not necessary to have an extra 'sit together' session in the hospital. They also excused themselves because of the long distance and being unable to find time to come. However, Miss A did turn up regularly for the follow up session. At the time of writing this report, Miss A had been followed up for a period of 6 months. In the 4th week of the follow up, she had a flu and her weight went slightly below the re-admission weight but she regained it the following week. So far she is able to maintain her weight in between 55 kg and 56 kg. Figure 1 shows her body weight during the various phases of treatment.

During the 6 months of follow up, she had been going out for dinner with her parents on several occasions. She reported no difficulty in eating. She no longer avoided food with high carbohydrate, nor did she feel guilty after eating as she used to previously. There appeared to be no body image deficit, nor any particular aversion to food intake. She no longer showed the compulsive need to keep busy and exercise. Instead she present as a reasonable relaxed person. Although there had been no radical personality change she was more aware of her emotional life and able to discuss it more freely.

DISCUSSION

Behaviour treatment of anorexia nervosa has been criticized for its over-emphasis on extremely rapid weight gain. It has been reported that in some programme, the criterion for reinforcement was set at .23 kg per day (9). Apparently such arrangement fails to recognise the natural physiological variations that accompany metabolic changes and redistribution during recovery. In this case study, a more moderate standard for weight gain, emphasizing weight regulation rather than rapid increase is adopted. There is no specification of how much weight gain Miss A should attain within any restricted time period. Although weight gain through this procedure is rather slow in the initial phase of treatment, it has the advantage of avoiding the risk of medical complications such as acute gastric dilation.

Perhaps a problematic issue of behavioural approach to the treatment of anorexia nervosa is the ethical dilemma posed by enforced treatment as most programme entails prolonged isolation and deprivation of 'normal right'. Voluntary cooperation may be refused because of the aversive nature of the treatment programme. It is therefore important that the programme does not deprive the patient from all social contact. And it is also essential that the rationale of the treatment plan be explained to the patient and her parents. Their consent for treatment must of course be secured.

The treatment of anorexia nervosa can be viewed as a two tiers process (10). Namely, a short term phase which aims at rapid restoration in times of nutritional crisis; and a long term phase which focuses on maintenance of weight gain and psychological adjustment. The operant conditioning procedure in this case study has achieved the immediate goal of helping Miss A to restore her weight within a period of 8 weeks. Although some behavioural therapists argue that the second goal of maintenance of weight gain remained a separate issue (11) there is little doubt that long term follow up is essential to a permanent change of anorexic behaviour. This is particularly necessary as numerous studies of long term prognosis in anorexia nervosa have indicated that weight gain during inpatient treatment is frequently temporary (12, 13, 14). Though Miss A was able to maintain her weight gain for 6 months after her discharge, it is still too short a period for the evaluation of treatment efficacy. Indeed, Morgan and Russell (4) had

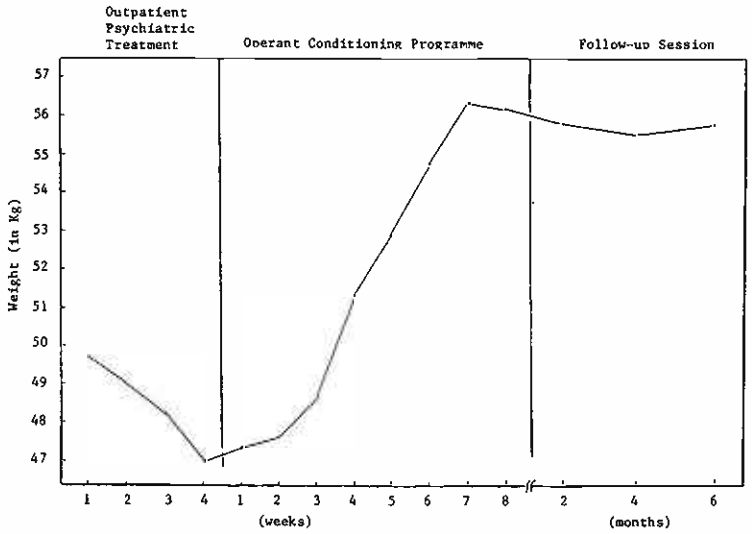

FIGURE 1 BODY WEIGHT IN DIFFERENT PHASES OF TREATMENT

TABLE 1 ORDER OF REWARD ITEMS CONTINGENT ON WEIGHT GAIN

Weight (in kg)	Reward Items
47.5	use of toilet
48.0	a shower per day
48.5	newspaper (alternate day)
49.0	receiving mail
49.5	newspaper daily
49.8	typing (not more than 30 minutes)
50.0	sending mail
50.5	individual counselling
50.8	typing (not more than 1 hour)
51.0	one hour visit a week (can have 2 half an hour) — number of visit not restricted
51.5	knitting
51.8	unsupervised meal (lunch)
52.0	2 hours visit a week (can be directed as above)
52.5	crossword book (one)
52.8	unsupervised meal (breakfast and lunch)
53.0	one phone call (less than 10 minutes) (nurses to supervise time)
53.5	photo/picture/flowers in room OT involvement
53.8	unsupervised meals (all)
54.0	radio in room
54.5	get dressed to go to lounge in evening
54.8	three phone calls (each 10 minutes) supervised by nurse
55.0	fruit in room
55.5	open evening visit
56.0	get dressed/free activities in Unit
56.5	open use of phone
56.8	cooking own meal
57.0	open visit
57.5	going for walk with staff
58.0	evening leave

Discharge after maintaining goal weight for 3 consecutive days.

even emphasized that follow up sessions should be extended for at least 4 years to be meaningful.

Reporting on a follow up study conducted an average of 23 months after discharge, Brady and Roger (15) found that 13% of patients had died, 23% remained underweight, and 29% required rehospitalization. This high relapse rate does not necessary imply that behaviour approaches are inadequate for long term maintenance of weight gain. It merely points out that a more extensive programme of therapy dealing with functional relationship in natural environment that maintain anorexic behaviour is needed. There is no reason to believe that behavioural principles, which has demonstrated a remarkable facilities in the first phase of treatment, cannot be applied in other fo· ns at the second phase of treatment. Wolpe (16) has suggested the use of systematic desensitization to treat social anxiety that may accompany anorexia nervosa. Behavioural therapy aims at broadening social repertoires could also be useful in providing alternative sources of gratification in anorexic patient. Treatment technique could certainly be devised to modify the aversive self-conditioning that may involved in the reactions of anorexia patients to weight gain or the self reinforcement associated with weight loss. Behavioural therapy can also integrate other treatment modality (eg. family therapy) (17, 18) to form a more comprehensive long term treatment programme for anorexia nervosa. More controlled studies which include scrupulous follow up information are no doubt needed to determine an optimal treatment strategy for anorexia nervosa.

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