

Behavior Therapy for Obesity

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Abstract

Behavior therapy for obesity aims to make lifestyle modification necessary for weight loss in areas such as diet and exercise. It had been found that behavior therapy promotes weight loss and its maintenance by increasing treatment compliance. Lifestyle modification is regarded as essential for any treatment of obesity such as medication, dieting, surgery etc.

Physicians often tend to be unwilling to use behavior therapy in clinical practice considering it time-consuming and skill-intensive. However, behavior therapy for obesity can be standardized and used more readily. Furthermore non-face-to-face therapy and computer-assisted therapy have also been developed. We can use these materials conveniently.

To achieve the goals of behavior therapy, that is, to change habits and to maintain these changes, it is necessary to promote patient's self-care and to maximize the patient's own ability to undertake this. Above all behavioral techniques, the theory and the principle of operant conditioning that voluntary behavior is reinforced by the contingency of the behavior is the most fundamental and therefore also an indispensable principle in general clinical practice.

It is also necessary to ascertain the patient's readiness to lose weight and to adjust guidance targets accordingly. Patients who demonstrated sufficient readiness were able to achieve an average weight loss of about BMI $-0.9\text{kg}/\text{m}^2$ by correspondence intervention with target setting and one month's self-monitoring followed by six-months of regular observations only. Therefore if health professionals utilize these readymade educational materials and programs, they could save their limited time in creating an effective environment in which to motivate patients and manage their progress.

Key words Behavior therapy, Obesity, Lifestyle modification, Self-care, Computer-assisted program

Introduction

The maintenance of a reasonable body weight is a base of the treatment of diabetes, hypertension and hyperlipidemia. Even slight weight loss of about 5% of initial body weight could bring significant clinical improvement. In order to reduce excess body fat, the energy balance has to be kept negative by reducing food intake and increasing physical activities. As simple as this might seem in theory, in practice it can be extremely difficult to accomplish. Even if weight loss can be achieved in the short-term, it is even more difficult to maintain in the long-term. Since

the 1960s, when obesity treatment first began to be taken seriously, the core challenges have been, and still remain that of motivating patients and of maintaining weight loss. By nature, many human beings prefer to eat as much as they want and like an easy life by avoiding exertion. Modern society has responded to these desires with the ready availability of convenience foods and the ever-increasing reliance on automated and motorized transportation. As a result, simple, healthy practices such as eating moderately and walking for an extra 20 minutes each day require even greater amounts of self-control and effort. Behavior therapy is psychotherapy that considers such human traits and tries to modify

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habitual behaviors. Its application to obesity started in the 1960s and its impact on motivation and the maintenance of effects became well established in the 1980s.¹

Due to practical time constraints medical professionals tend to be reluctant to use psychotherapy, and behavioral change with their patients. They have also tended to underestimate the educational effects. However, in the author's experience weight reduction has been achieved by setting targets and self monitoring in a group treatment² and also our original non face-to-face program which provides computer-tailored advice.³ Use of this program has shown that it is possible to standardize behavior therapy and facilitate implementation.

This paper gives an overview of behavior therapy for obesity, offers key pointers, and also describes specific ways in which medical professionals can promote and encourage self-care of patients.

Aim of Behavior Therapy and Its Problem-Solving Methods

The aim of behavior therapy is to increase the patient's capacity for self-control. Existing habits are considered learned behaviors to be changed gradually through a logical and methodical problem-solving approach. Initially, the problem is identified and described in terms of specific behaviors. These behaviors are then analyzed for stimulus-response relationships (Fig. 1). During this process, minute observations are made about the kinds of behaviors that happen at specific times and the consequences of those behaviors. To take the example of excessive drinking, the patient returns home in the evening and is bored on his own, he drinks too much beer, which he subsequently regrets, and as a result of the negative emotion wants to drink more. The environment and associated conditions are assumed to play a part in generating and sustaining the problem behavior. Once these have been identified, the patient can be encouraged to make changes in the environment so that the likelihood of desirable behavior is increased. Decision-making about subsequent courses of action is then dependent upon patients' actual behavior and ability to invoke change, in relation to the first analysis. Thus behavior therapy is evidence based, and the

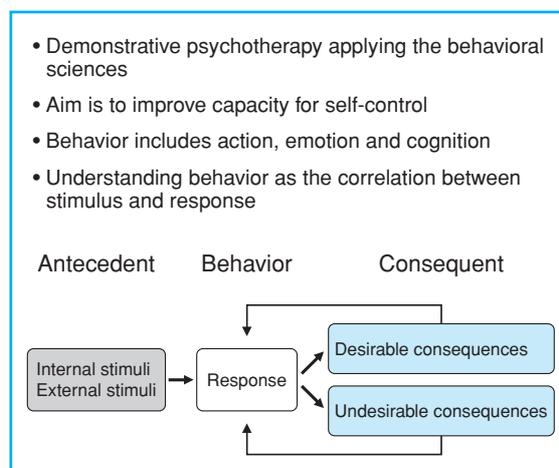


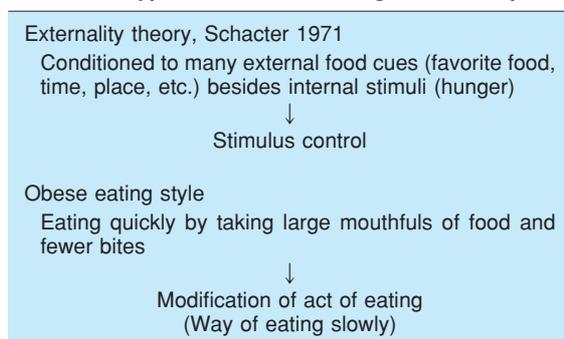
Fig. 1 Behavior therapy

patient's efforts are essential.

Behavior therapy is the clinical application of behavioral sciences and is a general term for behavior correction and cognitive behavior therapy.⁴ From the 1950s it came to be used mainly for problem behavior that is difficult to deal with in the psychiatric field. "Behavior" in this context includes both emotion, such as anxiety and depression, and cognition, including individual perception and mindset. Therefore, its application to a broad range of problem behaviors is possible. It has also been applied to psychosomatic medicine, general medicine⁵ and preventive medicine.⁶ Although understanding the theory requires familiarity with specialist terminology, the methods apply principles that appeal to common sense and in practice patients tend to be receptive to them.

Behavior Therapy for Obesity

Behavior therapy has long been applied to obesity and its usefulness was established ahead of other medical themes. Today, obesity is regarded as a chronic metabolic disorder caused by biological, behavioral, and socio-cultural factors. However, in the 1960s obesity was simply regarded as the result of "overeating." Based on clinical observations, two hypotheses were put forward to explain overeating (Table 1). The externality theory suggests that the obese tend to respond to external, physical stimuli such as the presence of favorite foods, certain

Table 1 Hypotheses of overeating and techniques

smells, or a time of day, in addition to, or aside from internal factors such as hunger. The second theory posits the existence of an 'obese eating style' characterized by eating quickly, taking large mouthfuls of food and few bites.

Since food sustains life and is an essential part of daily living, it is susceptible to become linked with a wide variety of stimuli, for example, the end of a meal signals the expectation of a desert or watching TV becomes associated with snacking. As eating behavior can be triggered by the presence of such commonly occurring stimuli it easily becomes habitual, and so stimulus control was proposed with the aim of restricting the stimuli associated with eating. In specific terms this might mean, "only putting the amount you're going to eat on your plate," "not eating while watching TV or reading the newspaper," "putting sweets out of sight" and "eating at a set time in a set place and eating with set cutlery."

Faced with a patient who eats quickly, eating style modification to reduce the eating pace is applied such as "put your knife and fork down after each mouthful and chew 20 times," "avoid soft food and choose food that is hard and crunchy." Additional strategies include "target setting," i.e. establishing specific behavioral and weight-loss goals, "self-monitoring" i.e. recording weight, meals, exercise and behavior, "operant reinforcement," i.e. rewarding the attainment of desirable behavior, and "response prevention and habit replacement" i.e. the suppression of impulsive eating behavior, are behavioral techniques for obesity that have long been used (Table 2).

In 1967 Stuart provided individual treatment for one year using these methods and achieved a

Table 2 Behavior techniques for obesity

- Stimulus control (restriction of stimuli that precede eating)
- Make patient eat slowly (chew each mouthful 20 times and eat hard foods)
- Target setting (specific behavior and weight-loss goals)
- Self-monitoring (recording weight, meals and target behavior)
- Operant reinforcement (scoring practice of behavior, rewards)
- Response prevention/habit replacement (suppressing impulsive eating by competitive behavior)
- Stress management
- Problem-solving methods
- Cognitive restructuring (changing maladaptive stereotyped thoughts)
- Social support (family, friends, club, and public health workers)

mean weight loss of 17 kg with eight patients.⁷ This is an epoch making therapeutic outcome and has prompted much subsequent research. Recently, NIH reviewed 36 randomized control trials of behavior therapy in its clinical guidelines for the treatment of obesity,⁸ concluding that 1) behavior therapy is effective in making diet and exercise habitual, 2) used together with dietary therapy and exercise therapy it definitely promotes therapeutic benefits and the subsequent maintenance of weight loss for up to one year, yet 3) such benefits do not, however, last for over three years if patients are left to their own devices. Besides the problem-solving behavioral techniques described above, various methods to keep efforts going in the long-term are being applied comprehensively where necessary, for example, "stress management," "cognitive restructuring" to correct maladaptive thought and cognition, "social skills training" (assertiveness training) to improve interpersonal communication, "relapse prevention" aimed at managing impulsive hunger and "social support" that makes use of the cooperation of family and friends.

The average therapeutic outcome of behavior therapy in the West today is about 9 kg weight loss in four months, while adding exercise or family therapy enables weight loss of up to about 11 kg. Because more drastic weight loss has adverse effects and abrupt weight loss is liable to

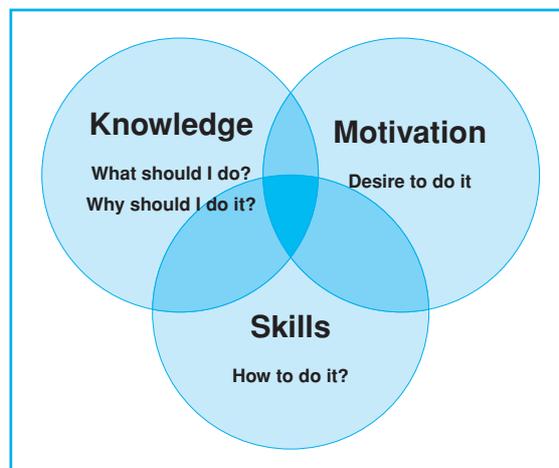
Table 3 Guidelines for weight control

1. At a slow pace (1–2kg/month)
2. Set attainable goals (5–10% loss of body weight in six months)
3. By changing habits (lifestyle improvement)
4. For people who can be expected to have health benefits from weight loss
5. For people ready to lose weight
6. With both diet and exercise together

rebound, the therapeutic guidelines set out in Table 3 have come to be considered as standard. For people who could expect health benefits from weight loss of about 5–10% of body mass, weight is reduced over a six-month period at a slow pace of about 1–2 kg a month through lifestyle improvements. To achieve lifestyle modification, the individuals in question must be properly informed (knowledge) and mentally prepared to commit themselves to losing weight (motivation), and acquire modification skills (Fig. 2). The necessity of exercise in weight loss has recently taken greater emphasis, since exercise prevents a reduction in energy consumption and a reduction in lean body mass as a result of cutting-back on food. Therefore increasing physical activities is essential for losing weight efficiently and maintaining the reduced weight.

Empowerment According to Readiness to Change Habits

The aim of behavior therapy is to change habits and to maintain changed habits. Maximizing an individual's own ability to effect that change is thus central. In order to achieve this, physicians, nurses, and nutritionists should guide the patients to make efforts to change their habits for themselves and support them by promoting self-care. Since the changing of long-established life habits such as diet and exercise involves sacrifice and pain, resolution and willpower are required. If individuals are ready for this, they can be coached in the techniques of behavior change. If they are not really ready, however enthusiastically they are encouraged, they are likely to resist, and the therapy may be counterproductive. The concept of “readiness” for habit change now has currency in the practice



Source: Adachi Y ed. Lifestyle Therapy. Ishiyaku Publishers inc. 1998.

Fig. 2 Conditions for changing habits

domain. Prochaska's “stage of change model” for smoking advocates five stages of readiness.⁹ In this paper three of these stages are used: Not ready, Unsure and Ready, as detailed in the sections below:

Dealing with people who are not ready

Faced with patients who show no interest in losing weight whatsoever, briefly explain the need to lose weight by objectively feeding back the patients' physical risk and encourage them to be careful not put on any more weight. Their interest may be aroused by, for example, providing teaching materials, recommending weekly weigh-ins and checking weight changes at every clinical visit. In many cases, even if patients appear uninterested at first glance, it may be the case that they have given up on the possibility of ever losing weight as a result of previous failed attempts. Alternatively, apparent disinterest may stem from feelings of guilt about being obese. The best course of action is to make patients think about what they could do now, without forcing them to do anything that looks impossible.

Dealing with people who are unsure

In some cases, even if patients are aware they need to lose weight, they have yet to reach the stage where they are resolved to do so. Again, in cases such as these, make patients understand what benefits losing weight would bring them

Table 4 Selection of dietary targets

	Doing already	Could do	Couldn't do
Eat till you're 80% full		<input type="radio"/>	
Eat no more than one bowl of rice or one slice of bread	<input type="radio"/>		
Eat no more than three fried foods (tempura, etc.) a week	<input type="radio"/>		
Choose low-fat milk and yoghurt		<input type="radio"/>	
Choose low-fat or non-oil mayonnaise and dressings		<input type="radio"/>	
Avoid eating <i>rahmen</i> or <i>ocha-zuke</i> after drinking	<input type="radio"/>		
Choose a Japanese set meal when eating out			<input type="radio"/>
Leave some rice when eating <i>donburi</i>			<input type="radio"/>
Restrict sweet soft drinks	<input type="radio"/>		
Restrict sweets and snacks		<input type="radio"/>	
Limit alcohol to no more than a glass per day	<input type="radio"/>		
Choose low-calorie snacks with drinks (vegetable sticks, etc.)	<input type="radio"/>		
More than two no-drinking days per week		<input type="radio"/>	
Finish evening meals no later than two hours before going to bed	<input type="radio"/>		
Avoid eating after evening meals		<input type="radio"/>	
Eat vegetables at least twice a day		<input type="radio"/>	
Eat fish at least four times a week		<input type="radio"/>	

Select targets from those you could do

and explore with them what could improve. For some people, visualizing specific behaviors for losing weight can give them the motivation to carry it through. Using questionnaires to help patients observe their habits and situation can prompt patients to notice their own tasks for themselves. Using simple educational materials that present many specific examples of target behaviors in areas that could be improved can also be helpful in enabling patients to learn efficiently by themselves. Encouraging individuals to think for themselves about which behaviors they might be able to change can also increase their inclination to lose weight of their own accord.

Dealing with people who are ready

For patients who are ready, decide on specific target behaviors and have the patients practice these daily on self-monitoring. To make this habitual, it is necessary to repeat the same behavior for a certain period and to do this the following two strategies are fundamental:

(1) Setting of target behaviors

Specify four or five target behaviors including both diet and exercise that could be expected to be beneficial if achieved, and that patients have a 70–80% chance of achieving so long as

they make a reasonable effort. If undertaken in an interview setting this will take a minimum of 30–40 minutes and also requires technique. However, such interviews often result in similar targets, such as for diet: “eating till you’re 80% full,” “no more than one sweet” and “no more than one bowl of rice or one slice of bread,” and for exercise “brisk walking for more than 30 minutes,” “walking for more than 40 minutes to and from work or on errands,” “10,000 steps a day” and “15 minutes stretching.”

As an alternative to time- and technique-intensive interviews, the author’s program mentioned earlier³ provides examples of commonly chosen behavior targets. Patients follow a series of preset steps that guide them through the process of selecting and setting themselves target behaviors¹⁰ (Table 4). First, patients look at the list of specific examples of desirable behaviors and then classify each item under the headings: “Doing already,” “Couldn’t do” or “Could do with some effort.” Second, patients choose about five target behaviors for diet and exercise from the items they considered they “could do with a some effort.” This raises patients’ awareness about their current habits, encourages them to be judge of what they are and are not capable of achieving, and lets them decide for

themselves what they are going to try to do. Given this process, target behaviors can be set comparatively easily even with limited time.

(2) Self-monitoring of weight and target behaviors

Patients subsequently carry out daily self-monitoring of their weight on a graph and of the achievement of their target behaviors using symbols. Self-monitoring is a useful means of self-control and consists of self-observation, self-evaluation, and self-reinforcement. When patients practiced such self-monitoring for at least one month, based on the author's experience, mean weight loss of about BMI -0.9 kg/m^2 over a six-month period has been obtained. At around two or three weeks, it is acceptable for patients to change the targets if they are too easy or too difficult. Self-monitoring tends to become monotonous, and it is necessary for physicians themselves to have a good understanding of the significance of this technique and to check patients records and remark on patients' efforts during each consultation.

Operant Reinforcement

Physicians should always pay attention to the patients' practical efforts. That is the principle of operant reinforcement that physicians should be most conscious of in routine consultations. The responses of a reliable doctor are important reinforcing stimuli for the patient. When physicians take notice of patients' efforts and highlight their achievements, this serves to increase the patients' desired behavior as a positive social reinforcer. Without making a conscious effort, however, it is easy for physicians to overlook this

fact. In addition to attending to test results, the author would like physicians to notice patients' behaviors and to acknowledge desirable effort and specific changes at the right time. This will increase the patients' self-esteem and satisfaction and encourage the continued practice of this behavior. In many cases, people are encouraged if they can lose as little as 1–2 kg by improving their habits and they are then able to keep up their efforts just through regular observations. Particularly at the introductory phase, it is effective to consciously focus on actual behavior rather than weight change.

Based on the above, behavior therapy for obesity can be summed up as follows: A gradual progression involving the use of various techniques, the provision of encouragement in an effort to improve the self-management ability of the individuals in question, having them embark on the dietary and exercise changes necessary to lose weight, and having them continue to practice this.

Some clinics have applied the aforementioned non-face-to-face program^{3,10}: patients answered questionnaires in the outpatients waiting room and physicians provided guidance with reference to tailor-made advice automatically provided based on the patient's data. Overall, patients were highly satisfied with this service.

The role required of physicians and health professionals in busy clinical practices would be to guide habit changes by making good use of readymade educational materials and programs, creating an environment that will motivate patients, and supporting their progress in the future. Behavior therapy offers a clear course of action for both patients and medical staff.

References

1. Stunkard AJ. Obesity. In: Bellack AS, Hersen M, Kazdin AE ed. *International Handbook of Behavior Modification and Therapy*. New York: Plenum Press; 1982:535–573.
2. Adachi Y. The effect of behavioral treatment of obesity and correlates of weight loss in treatment and at 2-year follow-up. *Jap J Behav Ther*. 1989;15:36–55. (in Japanese)
3. Adachi Y, Yamatsu K. The structured computer-tailored behavior change program for obesity. The long term weight loss and habits improvement at 9 months follow up. *Journal of Japan Society for the Study of Obesity*. 2004;10:31–36. (in Japanese)
4. Yamagami T. *Behavioral Therapy II*. Tokyo: Iwasaki Gakujutsu Shuppan; 1997:1–26. (in Japanese)
5. Pearce S, Wardle J. *The Practice of Behavioural Medicine*. Oxford: BSB Books with Oxford University Press; 1989.
6. Matarazzo JD. Behavioral health. In: Matarazzo JD, Weiss SN, Herd JA, et al. ed. *Behavioral Health*. New York: A Wiley-Interscience Publ.; 1984:3–40.
7. Stuart RB. Behavioral control of overeating. *Behav Res Ther*. 1967;5:357–365.
8. NIH NHLBI. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults. The evidence report. NIH Publication No.98–4083. 1998.
9. Prochaska J, DiClemente C. Stages and processes of self-change of smoking. *J Consult Clin Psychol*. 1983;51:390–395.
10. Adachi Y, Yamatsu K, Adachi K, et al. Psycho behavioral features and behavior changes in a correspondent weight control program users. *J Metabolism Clin Nutr*. 2005;8:39–48. (in Japanese)