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Behavioral Weight Reduction Procedures for Obese Mentally Retarded Individuals: A Review

Anthony Rotatori, Harvey N. Switzky and Robert Fox

Abstract: Behavioral approaches to the treatment of obese mentally retarded individuals are reviewed. Studies are examined regarding the level of mental retardation, age group, techniques employed and weight lost at the end of treatment. Conclusions relate implications for practitioners as well as future research concerns.

Obesity is a prevalent health problem in the United States for both mentally retarded and non-mentally retarded adults and children. It has been estimated that more than 40 million people are at risk for a variety of diseases, especially cardiovascular and renal disease, attributable to excess weight (U.S. Public Health Service, 1965). The problem is especially severe for mentally retarded individuals who are not only in jeopardy because of the increased health problems associated with being obese, but also because of the social stigma and prejudice associated with being mentally retarded and obese.

This paper provides a critical summary and review of behavioral techniques for the control of weight reduction for mentally retarded individuals. Their application for the control of obesity in the mentally retarded population is a fairly recent event originating during the decade of the 1970's (Staugaitis, 1978). However, descriptions of the behavioral techniques first developed are to be found in work completed in the early 1960's (Rotatori & Fox 1981).

Table 1 presents a summary of behavioral weight control studies concerning mentally retarded populations.

Review of Studies

Fox (1972) used external reinforcement with an institutionalized mildly mentally retarded teenager. The reinforcement was a trip to the facility canteen, contingent upon a 1½ pound weight loss during the previous one-week period. After 42 weeks of intervention, the girl lost 79 pounds.

Joachim (1977) used self-monitoring of food intake and weight to promote weight loss for an obese mildly mentally retarded institutionalized adult woman. A multiple baseline design was employed over a 33-week period. The design demonstrated

that the woman experienced the greatest amount of weight loss during the phases during which she was required to record her weight four times daily as well as the time, nature, quantity, and circumstances of all food consumed. During the entire intervention period, the woman lost 38 pounds. However, 46 weeks after intervention ceased, the woman was weighed and was found to have regained 37 of the original 38 pounds lost.

Foreyt and Parks (1975) used self-monitoring, external reinforcement, and stimulus control procedures with three obese severely mentally retarded adult women who lived at home. The dieters were taught to monitor their food intake with colored tokens that represented food types. The women were weighed daily and paid 50¢ per week for each weekly weight loss of at least one pound. Also, the parents of the participants were given a basic guide that explained how to establish behavioral weight controls against excessive eating in the home. At the end of an eleven-week intervention period, the women lost an average of 8.5 pounds. After 29 weeks following the end of treatment, a follow-up check revealed an additional average weight loss of 15.2 pounds per subject.

Buford (1975) described a multi-component treatment program developed with 15 moderately mentally retarded students ranging in age from 9 to 21 years. The program, implemented by a public health nurse, included self monitoring of weight, energy expenditure procedures and unique individual external reinforcement contingencies established with the cooperation of parents and staff. Participants attained a mean weight loss of 8.3 pounds per student during the 32 week treatment phase. A similar program (Heiman, 1978) was used with two Prader-Willi Syndrome young adults who were mild/moderately mentally retarded and were living in a residential facility. By the end of the intervention session which extended 12 weeks for

TABLE 1
BEHAVIORAL WEIGHT CONTROL STUDIES FOR THE MENTALLY RETARDED

Author	N	Level of Mental Retardation	Age Group	Techniques	Treatment Length in Weeks	Mean Weight Loss During Active Treatment in Pounds
Fox (1972)	1	mild	adolescent	external reinforcement	42	79
Joachim (1977)	1	mild	adult	self-monitoring of food and weight	33	38
Foreyt & Parks (1975)	3	severe	adults	self-monitoring of food and weight/external reinforcement/stimulus control	11	8.5
Buford (1975)	15	moderate	children/adolescents	self-monitoring of weight/energy expenditure/external reinforcement	32	8.3
Heiman (1978)	15	mild/moderate	adults	self-monitoring of weight/energy expenditure	12*	16.6
Altman, Bondy & Hirsch (1978)	2	mild/moderate	adolescents	self-monitoring of food and weight/external reinforcement/energy expenditure	33	31
Gumaer & Simon (1979)	11	moderate	adolescents	self-monitoring of weight/external reinforcement/energy expenditure	14	7.9
Rotatori, Fox & Switzky (1980)	10	mild	adults	self-monitoring of food and weight/emotional response routine/self and external reinforcement/energy expenditure/stimulus control	7	3.60
Rotatori, Parrish & Freagon (1979)	6	mild/moderate	children	self-monitoring of food and weight/emotional response routine/self and external reinforcement/energy expenditure/stimulus control	7	3.70
Rotatori, Fox & Switzky (1979)	6	moderate	adolescents	self-monitoring of food and weight/emotional response routine/self and external reinforcement/energy expenditure/stimulus control	14	10.37
Rotatori & Switzky (1979)	6	moderate	adolescents	self-monitoring of food and weight/emotional response routine/self and external reinforcement/energy expenditure/stimulus control (instruction via video tape)	14	11.00
	6	moderate	adolescents		14	9.45
Rotatori & Fox (1980)	12	moderate	adolescents	self-monitoring of food and weight/emotional response routine/self and external reinforcement/energy expenditure/stimulus control	14	10.27

one participant and an indeterminate amount of time for the other, the two participants averaged a weight loss of 16.6 pounds.

Altman, Bondy and Hirsch (1978) employed a multiple baseline design to treat two mild/moderately mentally retarded adolescents diagnosed as having Prader-Willi Syndrome. The program consisted of three components: (a) self-monitoring of caloric intake, daily morning weight, and type and duration of exercises; (b) positive reinforcement for weekly weight loss and reduced caloric intake; and (c) positive reinforcement for weight loss only. The participants did experience weight reduction (mean = 31 pounds), but the multiple baseline design revealed that the self-monitoring treatment condition was not the contributing factor. In contrast, the contingency involving reinforcement for decreased caloric intake and weight loss resulted in reduced weight and lowered caloric intake for both adolescents. Weight losses continued after reinforcement for reduced caloric intake was removed and given only for weight loss.

Self monitoring of food intake, external reinforcement and energy expenditure procedures were the integral components of a weight reduction program developed for 11 obese moderately mentally retarded students by Gumaer and Simon (1979). Students received three types of reinforcers for weight loss, namely, participation in a special activity, praise by both counselor and fellow group members, and the recording of additional weight loss on a thermometer chart. The average weight change for the students during the 14-week treatment period was 7.9 pounds. A follow-up check revealed an additional weight loss of 2.75 pounds per student.

Consistent weight loss with moderately and mildly mentally retarded dieters has been repeatedly demonstrated as a result of a multicomponent behavioral weight reduction package that emphasized self and external reinforcement (Rotatori, 1978). Seven instructional units were presented either three or six times (the total instructional treatment phase lasted seven or fourteen weeks). Individuals who have participated in this program have learned how to: (1) self-monitor daily weight and food intake, (2) manipulate their emotional responses to foods in order to discourage the urge to overeat, (3) limit themselves to one helping at a meal, (4) reduce eating rate, (5) perform food-cue elimination techniques, (6) increase energy expenditure and (7) eliminate or reduce snacking. Participants in the weight control program also learned how to grade themselves on their perfor-

mance in each of the above tasks on a daily basis. The participants' grades were then exchanged for activity cards and covert self-reinforcer cards of values matching the self-assigned grades (self reinforcement). Each participant was also weighed on a weekly basis and presented with an additional highly-prized activity contingent upon completing the recording forms and a one-pound weight loss from the weight at the previous week's weigh-in (external reinforcement).

The treatment phase was followed by a five- or six-week maintenance phase, within which the instructional components and use of the recording forms were reviewed once or twice weekly. This was done to encourage continuation of the skills learned in the initial instructional sessions. The participants were weighed once again 10 to 26 weeks after the end of this maintenance phase.

Rotatori, Fox, and Switzky (1980) first presented the components within seven weeks to ten mildly mentally retarded adults who lived in a semi-independent residential intermediate-care facility. By the end of the treatment phase, the ten participants lost an average of 3.6 pounds per subject. At this point, the ten participants were randomly assigned to two groups. One group reviewed the components and use of the recording forms once weekly on a regular (every seventh day) basis. The other group reviewed the components and use of the recording forms on an unannounced-gradually-increased-schedule (every three to twelve days). At the end of the six-week maintenance phase, and ten weeks after the end of the maintenance phase, the participants were again weighed. At both points there was no significant difference in weight change between the two groups, nor did a clinically significant weight change for either group occur at either point. Similar findings resulted from a study (Rotatori, Parrish & Freagon, 1979) with six mildly or moderately mentally retarded children and a study (Rotatori, Fox & Switzky, 1979) with six moderately mentally retarded Down's Syndrome adolescents. A fourth study (Rotatori & Switzky, 1979) with 12 moderately mentally retarded teenagers employed video tape instruction for the subjects during the treatment and maintenance phases. In spite of the variation of the presentation of instruction, significant weight losses occurred.

A concluding study (Rotatori & Fox, 1980) investigated the efficacy of behavioral treatment procedures as compared to a social-nutrition weight reduction approach with 30 moderately mentally retarded adolescents. All subjects were enrolled in a full-day public school program and lived in the community. A high school vocational teacher

served as the diet leader for the behavior therapy group and a high school nurse served as the diet leader for the social-nutrition group. Six participants were assigned to a wait-list control group. The social nutrition group training sessions were concerned with the following topics: (1) nutritious foods to eat; (2) low caloric snack substitutes; (3) the advantages of exercising; (4) reasons not to eat when emotionally upset; (5) talking about negative feelings associated with being overweight; (6) being positive about losing weight; and (7) setting weight goals. The results indicated that the behavior therapy participants lost more weight under all conditions than either the social-nutrition or wait-list control groups. The behavior therapy participants lost an average of 10.27 and 2.29 pounds per subject during the fourteen-week treatment and five-week maintenance phases, respectively.

Implications for Practitioners

A major goal of most behavioral treatment programs is to teach new adaptive behaviors to occur and be maintained in numerous settings (Gardner, 1974). Generalizations of behavior change are defined as the transfer of a behavior learned in a training session (e.g., slower eating rate) to other situations and settings (Kazdin, 1975). Two ways to enhance the probability that behaviors learned in a treatment setting may transfer to the individual's natural environment are: (1) increasing the similarity between the natural environment and the treatment setting; and (2) having the dieters practice their new eating patterns in every setting in which they eat. The first point is especially crucial for the mentally retarded individual (Gardner, 1977). Consequently, training techniques with mentally retarded individuals should use actual foods and an eating setting that closely approximates the natural eating setting.

Maintenance of techniques taught and weight loss after a weight reduction program terminates should continue to cause problems for researchers and clinicians working with the obese mentally retarded population. One of the problems with traditional programs is that after a treatment program ends, the dieters lose all of the external reinforcers which help them develop and maintain weight loss during treatment. This recurring dilemma can be partially resolved by teaching the mentally retarded dieters to become their own reinforcing agent. Thus, training in self-reinforcement is designed to teach the dieter to find and use natural reinforcers for behavior change to

maintain the new behaviors after external contingencies are eliminated.

Maintenance can further be facilitated by involving significant others in the dieter's school and living environment. By involving combinations of parents, ancillary care personnel or teachers to assist in the weight reduction program, the weight therapist increases the likelihood that the dieters will use the techniques trained. These significant others can provide the dieters with additional social reinforcers for attained weight loss. Practitioners working with the mentally retarded should realize that the rate at which weight is lost is very crucial. Hall (1972) reported that successful weight programs usually resulted in a weight loss ranging from one-half pound to one pound each week. Weight loss programs which produce *faster* rates of weight loss may be *less effective* for long-term maintenance of the lost weight. A slow and steady rate of weight loss is preferred for very important reasons. There are certain levels of food deprivation which can result in eating behavior even though the individual has developed some weight reduction skills. Eating to alleviate hunger has been referred to as the subject's disposition to eat. This type of eating differs from the obese individual's greater tendency to eat when external cues for food are present independent of their deprivation state (Schacter, 1971). Techniques which have been used with mentally retarded individuals can alter the rate of eating without causing any major disruption to the person's *disposition* to eat. These strategies which gradually modify the mentally retarded dieter's specific overeating behavior patterns can produce the steady rate of weight loss desired.

Future Research Concerns

Difficulties in evaluating the effectiveness of behavioral studies with mentally retarded individuals are attributable to the following: (1) lack of uniformity in experimental design; (2) no standard way for reporting weight loss; (3) an absence of long-term follow up checks; (4) no reliability reports on whether or not the techniques trained were used by the dieters; (5) lack of information on amount of therapist and environmental personnel time in assisting the dieter in losing weight. A number of authors (Mahoney and Mahoney, 1976; Stuart, 1980) suggest that the following procedures be adopted to strengthen the effectiveness of behavioral studies; (1) inclusion of nontreatment controls; (2) inclusion of attention-placebo controls; (3) accurate and complete procedural descriptions; (4) complete reporting of outcome data for all subjects

(including the dropouts); (5) determination of possible contributors to change (e.g., beliefs, attitudes); (6) follow-up checks of at least one year and ideally two to three years; and (7) the measurement of a variety of dimensions of outcome (e.g., client characteristics). If these procedures are adopted, investigators can make generalizations across studies as well as predict which dieters should benefit most from which behavioral techniques.

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