

Introduction to The Gastrointestinal System (Including Eating Disorders)

The gastrointestinal system is the focus of more disease syndromes than any other portion of the body. Problems of food palatability, indigestion, gastric, biliary, and ulcer disease, colitis, and elimination disorders encompass a large part of traditional psychosomatic medicine. Unfortunately, little behavioral research has focused on treating these problems. Rather, the focus of research in this area, and the emphasis in this section, is on weight and disorders of elimination. Our inclusion of weight as a gastrointestinal disorder is admittedly arbitrary. In fact, there is little evidence that would support its position in this section rather than with chapters on the central nervous system, psychoneuroendocrinology, or addictive behaviors.

Disorders of weight are intriguing to the behavioral scientist for several reasons. For many, these syndromes provide a dependent variable with 100% interobserver reliability, which is easily measured, and an associated set of precisely specifiable behaviors which can serve as independent variables in experimental paradigms. It is an area of medical and behavioral concern that, prior to the innovation of behavioral techniques, was quite resistant to change. The clinical need for effective treatment is well proven, and the medical consequences of obesity have been demonstrated innumerable times: Significant excess weight increases the morbidity and mortality from every known disease process. Despite this known effect, medicine does not do well in treating obesity, and many patients are caught up in a repeating pattern of crash weight loss through diet pills and starvation followed by weight gain—the “rhythm method of girth control”—as Jean Mayer has colorfully called it (7).

Much of the behavioral literature has been based on the ~~initial postulate of Ferster et al. (4) that there is a difference in the eating style of obese and nonobese individuals, and that eating style is learned. Although several studies have failed to demonstrate this difference in eating style between adult obese and nonobese subjects (1), the programs based on Ferster's postulates are effective.~~

Most treatment programs for obesity are based on the simple model that an individual who consumes more calories than they utilize in the average day will become overweight. The behavioral literature has concerned itself largely with the habits that lead to excess caloric intake or inadequate caloric expenditure. There are, however, a **wide variety of additional factors that influence both fat metabolism and body size, including genetic predisposition (2, 7), age of onset (10), structural (14) and biochemical (11) lesions of the central nervous system, hormone disturbances (5, 12), neuropeptide abnormalities (8), stress (9), and response to food palatability (6).**

In both animals and humans, the signals for hunger and satiety remain unknown. Behaviorally, we have worked largely with the environment to change caloric intake, but may have been inadvertently effecting any of the above control mechanisms. **Clearly when this many contributing factors can be specified for a disease syndrome, a syndrome taxonomy is in order.** For example, one might separate patients with lipogenic, behavioral, genetic, hypertrophic-hyperplastic, and boredom-induced obesity, and design a behavioral program appropriate to each.

In the first paper in this section, Jeffrey points out some of the economic and societal factors involved in the problem of obesity. His analysis of health problems and their relationship to both excess weight and nutritional intake is startling. To date there have been few macroenvironmental programs developed to attack this problem.

In the next chapter Hagen reviews the behavioral research on adult obesity. Although the first studies of behavioral weight control were not impressive, Stuart's subsequent interventions (13) suggested great possibilities for behavioral control. Many variations of Stuart's original program have appeared and been applied to a wide variety of populations by a wide variety of therapists. Although few people have equalled Stuart's initial positive results, behavioral programs have been found to be consistently effective in the short run. Unfortunately, the effects tend to disappear over time. Because of the long period of time needed to carry out studies on behavioral maintenance techniques, the literature in this area is sparse. Hall et al. discuss this problem in detail in Volume 3 of this Handbook, Chapter 7.

Behavioral studies of obesity have provided a model for testing a variety of behavioral interventions—for example, types of therapists, therapeutic settings, therapeutic meeting frequency, contingent refunds, and positive vs. negative reinforcement. Hagen reviews many of these in detail; for example, for the problem of obesity it appears that therapist contact does not have to be

intense; that “minimally” trained therapists appear to do as well as highly trained therapists, and that bibliotherapy may provide an alternative to costly personal therapeutic intervention.

Unlike adults, normal and obese children may have significantly different eating styles. Drabman explores the eating behaviors of children and points out that these differences among thin and overweight children may be seen in some infants during the first day of life, prior to any possible postnatal learning. He points out that differences in eating behaviors may be present but modifiable at birth, but may stabilize with increasing age. To date, a program has not been developed to change the eating behaviors of children, but clearly the data indicate that such change may be possible. Prior to the overlay of social behaviors with increasing age, eating behaviors in this age group may be far simpler and less overdetermined than in the older person.

In the next chapter on adolescent obesity, Coates and Thoresen ask a disturbing question, “Is there any hope?” They note the particular difficulties of achieving weight loss in overweight adolescents with traditional behavioral change techniques. Their experimental program is based on social learning theory principles with the assumption that eating is influenced by events in the immediate physical and social environment. They used single-subject designs with a series of adolescent girls to examine different treatment approaches. Their individual problem-solving program, which involved the entire family, seemed effective in producing short-term changes in eating and exercise behaviors as well as weight change. To examine the effective factors more intensely, they used a group study design incorporating the same therapeutic principles. In this second study, their results were less than hoped for. They posed the question: Was this due to a failure to incorporate sufficient environmental support into their treatment package? A second group study used behavioral contracts for weight loss and habit change, and resulted in impressive weight loss.

Three chapters elsewhere in this Handbook are directly relevant to a discussion of obesity. Yates (Volume 3, Chapter 8) describes a cost-effective/cost-utility analysis of treatment procedures for obesity and uses weight reduction programs as an example of how cost-effectiveness can be calculated. Nash and Farquhar (Volume 3, Chapter 14) report the results of their three-community study of intensive instruction, including nutritional information, with and without intensive media advertising, compared with a control community. Their dependent variables included cardiovascular risk factors and obesity. The results of this study are extremely important when one considers the public health consequences of making large risk factor changes. Wing and Epstein (Volume 1, Chapter 7) discuss some of the implications of exercise on weight.

On the other end of the weight continuum are individuals who are too thin. Curiously, the behavioral literature has concentrated only on the pathological condition of anorexia nervosa, with no published research

available on simple anorexia, or treatment programs for individuals who are too thin but without signs of psychopathology.

The treatment of anorexia has stimulated considerable research. Ferguson describes the history of this disorder and much of the experimental work which has provided the basis for a comprehensive treatment program. ~~As with obesity, the long-term outlook is somewhat less encouraging than the immediate results.~~ Although to date there has not been a controlled comparative group outcome study, research centers where individuals have been nonrandomly assigned to behavioral, nutritional-nursing, or psychotherapeutic treatment modalities have found little outcome difference at follow-up. However, this may speak less to the issue of behavior modification for anorexia nervosa than to the inadequacy of follow-up programs. Finally, as with obesity, the biological basis for anorexia nervosa has not been clearly specified. ~~A large body of scientific investigation has demonstrated that the hypothalamus is intimately involved in the regulation of weight and appetite, and that its function is severely disturbed in these patients. More recently short-chain polypeptides have been implicated in the maintenance of this disorder (8).~~

Doleys discusses encopresis, another common gastrointestinal disorder more prevalent in children than in adults. He defines the underlying physiology of defecation and the varieties of disturbance in this system, and stresses the need for careful medical and behavioral assessment. Treatments have varied from the use of laxatives to diapering: He urges a multimodal approach beginning with positive reinforcement for induced bowel movements if necessary, and progressing to token reinforcements for maintenance of clean pants.

This section concludes with a brief review of the behavioral approaches to other gastrointestinal disorders. The use of biofeedback to treat fecal incontinence and other "sphincter" disorders is a major contribution from the area of behavioral medicine. These highly embarrassing disorders previously could be treated only by diapering, a procedure quite humiliating for an adult. Other gastrointestinal disorders have been approached in single case studies and need to be further pursued. For example, the effects of operant conditioning on gastric function, bowel sound feedback to decrease intestinal motility, and relaxation and related techniques to decrease gastric motility.

We have not included a section on nutrition in this chapter or elsewhere because so little behavioral research has been done in this area. The attractiveness of weight as a variable may have inadvertently led us to neglect the equally, if not more, important area of nutrition. And yet, the average American diet is hazardous to our health. A few preliminary studies have shown that behavioral techniques show promise in changing eating habits. One program resulted in a significant reduction (greater than 25%) in serum cholesterol levels in individuals by using stimulus control techniques and

media plus intensive instruction and encouragement in diet change in Volume 3, Chapter 14. The area of nutrition is in desperate need of study by behavioral researchers.

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