



The importance of eating behavior in eating disorders

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ABSTRACT

A disturbance in eating behavior is the defining characteristic of the clinical eating disorders, Anorexia Nervosa, Bulimia Nervosa, and Binge Eating Disorder. Surprisingly little research has been devoted to assessing objectively the nature of the eating disturbances in these disorders, to elucidating what factors contribute to the development and persistence of these disturbances, or to describing how they change with treatment. This review, which is based on a Mars lecture delivered at the 2010 meeting of the Society for the Study of Ingestive Behavior, reviews objective information about the nature of the disturbances of eating behavior in eating disorders. These data suggest that more detailed knowledge of eating behavior is an essential component of a full understanding of eating disorders and may provide a foundation for studies of pathophysiology and for the development of new treatment methods.

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1. Introduction

This review is based on a Mars lecture given at the 2010 meeting of the Society for the Study of Ingestive Behavior. The focus of the lecture was on the relevance of research on eating behavior to our understanding of the “classic” eating disorders, Anorexia Nervosa, Bulimia Nervosa, and Binge Eating Disorder. This paper will briefly review work on Bulimia Nervosa and Binge Eating Disorder, and will focus more on recent work on the study of Anorexia Nervosa. As did the lecture, the paper will be based primarily on work conducted at the Eating Disorders Research Unit at New York State Psychiatric Institute, Columbia University Medical Center.

1.1. Bulimia Nervosa

The salient feature of Bulimia Nervosa is the occurrence of recurrent episodes of binge eating accompanied by inappropriate behavior to avoid weight gain, typically self-induced vomiting. The current DSM-IV diagnostic criteria in the current (fourth) edition of the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-IV) also require that both the binge eating and the inappropriate compensatory behavior occur at least twice a week for 3 months [1]. Individuals with Bulimia Nervosa are typically women of normal weight in their teens or early 20s who are very concerned about their shape and weight.

When Bulimia Nervosa first came to prominence in the early 1980s, much was unclear about the nature of this disorder. A fundamental question was whether patients' reports of the consumption of very large amounts of food in short periods of time were

accurate, or, rather, were a reflection of their anxiety about the consumption of what were, in fact, only modest amounts of food.

Our group, in close elaboration with that of Harry Kissileff, PhD, embarked on a series of studies aimed at the objective assessment of the eating behavior of individuals with Bulimia Nervosa [2]. Our initial studies were quite straightforward. We provided patients with a multi-item array of foods, and simply asked them to engage in binge eating of the type that they engaged in outside the laboratory. They were provided access to a bathroom if they wished to purge. While not all individuals were able to do so, a sufficient number were able to comply with the request to binge eat to permit the measurement of their eating behavior. Under these conditions, individuals with Bulimia Nervosa consumed substantially larger amounts of food, almost 4000 Kcals, than did control subjects given the identical instructions, who consumed just over 1000 Kcals (Fig. 1A). In addition, the types of foods chosen by individuals with Bulimia Nervosa did not support the then-popular notion that this disorder was characterized by “carbohydrate craving.” Both patient and control groups selected meals with macronutrient compositions similar to that of the average American diet, with approximately 50% of calories from carbohydrates, 40% from fat, and 10% from protein (Fig. 1B).

We also asked both patients and controls to consume a non-binge meal, that is, an amount of food that they could eat comfortably without the need to purge afterwards. Under these conditions, patients with Bulimia Nervosa consumed significantly fewer calories than controls (Fig. 2). These results indicated that the abnormalities in eating behavior in Bulimia Nervosa were not confined to episodes of binge eating, and were consistent with clinical reports. When not binge eating, individuals with Bulimia Nervosa markedly restrict their food intake, leading to a vicious cycle of binge eating followed by food restriction in an attempt to compensate which then leads to increased appetite, setting the stage for another episode of binge eating. The laboratory documentation of this

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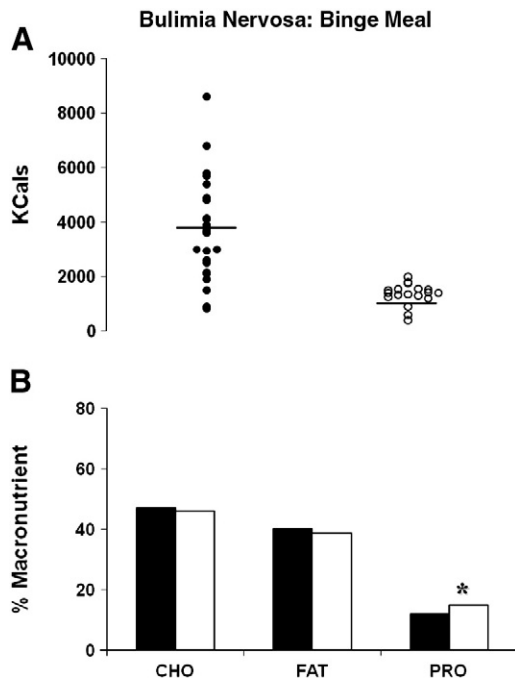


Fig. 1. Kilocalorie content (1A) and macronutrient composition (1B) of binge meals of patients with Bulimia Nervosa. In 1A, filled circles are from patient meals and open circles are from control meals. In 1B, filled columns indicate means of patient meals and open columns indicate means of control meals. Adapted with permission from [2].

pattern provides a foundation for a major component of cognitive-behavioral therapy (CBT), the most effective psychological treatment for Bulimia Nervosa [3]. Specifically, one of the important first steps in CBT is to encourage patients to consume more during non-binge meals to interrupt the restrict-binge-restrict cycle.

These initial studies of Bulimia Nervosa were important in several regards. Critically, they demonstrated that disturbances in eating behavior could be examined objectively in a laboratory setting, thereby avoiding the necessity of relying solely on self-report data which are notoriously inaccurate. (At the same time, it cannot be automatically assumed that the behavior of subjects in laboratory is identical to their behavior outside such settings.) The results buttressed important clinical observations regarding key characteristics of the disorder, for example, that binge eating episodes were, in fact, objectively large, and that, as just noted, individuals with Bulimia Nervosa tend to restrict their food intake when not binge eating.

A crucial finding about the eating behavior of individuals with Bulimia Nervosa during binge episodes was that the salient disturbance

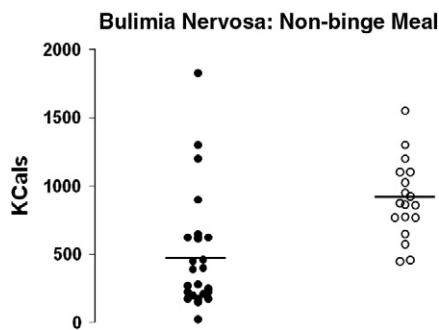


Fig. 2. Kilocalorie content of non-binge meals of patients with Bulimia Nervosa. Filled circles are from patient meals and open circles are from control meals. Adapted with permission from [2].

was in the control of the amount consumed, rather than the consumption of a specific food or macronutrient. Combined with the extensive literature on the controls of food intake in animals, this observation laid the foundation for substantial work over the last 20 years by the Columbia group and others on the development of satiety in Bulimia Nervosa [4], on post-prandial disturbances in CCK release [5–8], and on gastric and autonomic functioning [9,10]. While this work has been highly informative, it has not yet succeeded in definitively answering the critical question of whether individuals with Bulimia Nervosa have a disturbance in satiety that sets the stage for binge eating, or whether, because of emotional or cognitive difficulties, normal signals of satiety are overridden by individuals with the disorder [11].

1.2. Binge Eating Disorder

Although Binge Eating Disorder was described in 1959 [12], it came to prominence in 1994 when DSM-IV was under development [1]. While Binge Eating Disorder was not formally recognized in DSM-IV, criteria were provided in an appendix for further study. The provision of these criteria has spurred substantial research interest in Binge Eating Disorder, and it is currently recommended for inclusion in DSM-5. The hallmark feature of Binge Eating Disorder is the occurrence of recurrent episodes of binge eating in the absence of the inappropriate compensatory behavior characteristic of individuals with Bulimia Nervosa. In contrast to those with Bulimia Nervosa, individuals with Binge Eating Disorder tend to be overweight or obese and middle-aged.

A modest amount of research has focused on characterizing the eating behavior of individuals with Binge Eating Disorder. Using techniques similar to those developed to examine Bulimia Nervosa, several studies documented that individuals with Binge Eating Disorder, compared to individuals of similar age and body weight, consume significantly more food in a laboratory setting when asked to binge eat (Fig. 3) [13]. However in contrast to individuals with Bulimia Nervosa, who undereat when asked not to binge eat in a laboratory meal, individuals with Binge Eating Disorder consume more than comparable controls even when not asked to binge eat (Fig. 4).

These findings are both reassuring and perplexing. As in the case of Bulimia Nervosa, it is reassuring that individuals with Binge Eating Disorder, at least in the laboratory setting, exhibit eating behavior that is distinctly abnormal. This well-replicated observation suggests that the core abnormality of Binge Eating Disorder is a disturbance in eating behavior, not in the perception of what is eaten. What is perplexing is the observation that individuals with Binge Eating Disorder consume more than controls during both binge and non-binge meals. If the laboratory meal data were representative of meals outside the laboratory, one would expect individuals with Binge Eating Disorder to be gaining weight much more rapidly than comparable controls. The limited data available do not support this. Of course, it is conceivable that individuals with Binge Eating Disorder

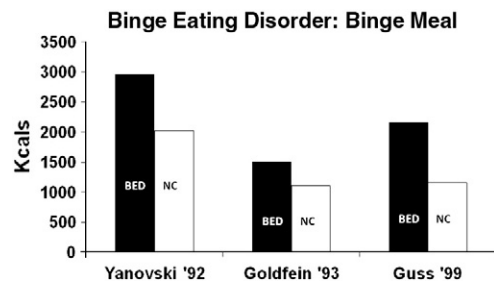


Fig. 3. Average kilocalorie content of binge meals of patients with Binge Eating Disorder (BED) and controls (NC) from three studies. Filled columns indicate means of patient meals and open columns indicate means of control meals.

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