# The Impact of Emotional Eating Triggered by Binge Eating Disorder on Mental Health and Its Educational Implications

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***Abstract:*** Binge Eating Disorder (BED) is not merely a disturbance in eating behavior; the emotional eating it triggers constitutes a critical pathway that compromises an individual's mental health. This article aims to explore how BED affects mental health through the mechanism of emotional eating, analyzing the underlying pathways from both psychological and physiological dimensions, including impaired inhibitory control, dysregulation of the reward system, and the modulatory role of the gut-brain axis. Building on this analysis, the article proposes educational implications for students in higher vocational colleges and undergraduate universities, emphasizing the integration of mindfulness training, healthy dietary interventions, and a multidisciplinary support system to interrupt the vicious cycle of emotional eating and promote comprehensive physical and mental health development among students.

***Keywords:*** Binge Eating Disorder; Emotional Eating; Mental Health; College Students; Mindfulness

**DOI:10.12417/3029-2328.26.02.002**

## 1.Introduction

Binge Eating Disorder (BED) is a prevalent eating disorder characterized by recurrent episodes of uncontrollable binge eating, often accompanied by significant negative emotions such as guilt and depression. According to the DSM-5 diagnostic criteria, binge eating episodes occur, on average, at least once weekly for three months. Unlike bulimia nervosa, individuals with BED do not engage in compensatory behaviors, which often results in higher body weight and further exacerbates psychological burden[1].

The global prevalence rate of BED is approximately 1.4%, with higher rates observed among young women, college students, and highly educated populations[2]. In China, approximately 0.7% of adolescents meet the diagnostic criteria for BED[3]. Emotional eating refers to eating in response to negative emotions rather than physiological hunger[4]. Among individuals with BED, emotional eating serves as a core mediating mechanism linking binge eating behaviors and mental health problems[5][6]. Understanding this mechanism holds significant theoretical and practical importance for developing effective intervention strategies, particularly for early education and intervention among college student populations[7][8].

## 2.BED and Emotional Eating: The Genesis of a Vicious Cycle

Individuals with BED often enter a binge eating state triggered by negative emotions. Subsequently, the binge episode itself generates profound feelings of guilt, loss of control, and physical discomfort, creating a self-reinforcing vicious cycle[9][10]. Emotion regulation theory posits that when individuals lack adaptive strategies for managing emotions, eating becomes an immediate but maladaptive coping mechanism[4]. Escape theory further explains that binge eating allows individuals to temporarily escape from negative self-awareness, yet the subsequent sense of loss of control intensifies negative emotions[11].

Overvaluation of weight and shape amplifies this tendency. Research indicates that individuals who base their self-worth excessively on body shape are more susceptible to eating in response to negative emotions[12]. Empirical studies support this view: participants in social exclusion experiments significantly increased their ice cream consumption[9], and negative life events prompt individuals to choose high-calorie foods[6]. Ecological momentary assessment studies reveal that negative emotions rise significantly before binge episodes, while post-binge negative emotions increase due to self-blame[13].

## 3.Pathways Through Which Emotional Eating Impacts Mental Health

### 3.1 Impaired Inhibitory Control

Inhibitory control refers to the capacity to suppress impulses in pursuit of long-term goals. Negative emotions impair the prefrontal cortex's regulation of limbic system activity, making it more difficult for individuals to resist the temptation of high-calorie foods. Leehr et al. found that individuals with BED exhibited significantly higher error rates in inhibiting responses to food cues under negative emotional states compared to healthy controls[14]. Event-related potential studies have shown that negative emotions deplete cognitive resources, making individuals more susceptible to food-related cues[13]. The failure of inhibitory control not only directly triggers binge eating but also exacerbates depression and anxiety by damaging self-efficacy[13][14].

### 3.2 Hyperactivation of the Reward System

Palatable foods activate the brain's reward system, releasing dopamine and endogenous opioids [15]. In individuals with BED, this reward system shows hyperactivation in response to food cues[16]. Negative emotions further amplify this response, making patients more inclined to seek emotional comfort through eating, thereby forming a behavior pattern resembling addiction. Chronic binge eating downregulates dopamine D2 receptor density, leading to tolerance and craving. Gut microbiota dysbiosis can influence the reward system via the vagus nerve, further intensifying cravings for high-calorie foods[15][16].

### 3.3 The Modulatory Role of the Gut-Brain Axis

The gut-brain axis is a bidirectional communication network connecting the gastrointestinal tract and the central nervous system[17]. Gut microbiota profoundly influence emotions by producing neurotransmitters, regulating inflammatory factors, and affecting vagus nerve signaling. Approximately 90% of the body's serotonin is synthesized in the gut, with microbiota directly affecting tryptophan metabolism[18]. Individuals with BED often exhibit gut dysbiosis, characterized by reduced beneficial bacteria and increased pro-inflammatory species. This imbalance affects serotonin synthesis, increasing the risk of depression and anxiety[16][18]. Research indicates that probiotic interventions can significantly reduce anxiety levels[19][20], and fecal microbiota transplantation can improve depressive symptoms[21]. These findings provide novel avenues for physiological intervention in emotional eating[16][17].

## 4.Intervention Strategies: An Integrated Approach from Psychology to Physiology

### 4.1 Mindfulness-Based Interventions

Mindfulness emphasizes non-judgmental awareness of present-moment experiences and effectively enhances emotion regulation capacities and inhibitory control[22]. Mindful eating training guides individuals to attend to physiological signals of hunger and satiety, distinguishing between physiological and emotional hunger. Kristeller et al. found that an 8-week mindful eating intervention reduced binge eating frequency in BED patients from an average of seven times per week to three times, with reductions in BMI and maintained effects at follow-up[23]. Minari et al. confirmed these findings, demonstrating significant improvements in emotion regulation and reductions in emotional eating[24]. By reducing avoidance of negative emotions and diminishing repetitive negative thinking, mindfulness blocks the pathway triggering emotional eating[13]. A key advantage of mindfulness-based interventions is the long-term maintenance of their effects[23].

### 4.2 Dietary Interventions and Gut Health

Leveraging the regulatory mechanisms of the gut-brain axis, dietary interventions have emerged as crucial strategies for improving emotional eating. The Mediterranean diet, rich in vegetables, fruits, whole grains, and healthy fats, has been shown to significantly reduce depression scores and improve gut microbiota composition[17]. Probiotic supplementation has also proven effective, increasing tryptophan levels and promoting serotonin synthesis[18][20]. For individuals with BED, dietary interventions should emphasize increasing dietary fiber intake,

consuming fermented foods, and reducing high-sugar and high-fat foods, integrated with psychological interventions to form a comprehensive treatment model[16][17].

## 5.Educational Implications: Prevention and Intervention for Students

College students are in a developmental period known as emerging adulthood, facing multiple pressures from academics, interpersonal relationships, and employment. Consequently, emotional eating problems are becoming increasingly prominent within this population. Surveys indicate that the detection rate of emotional eating among college students ranges from 30% to 50%[8]. Higher vocational colleges and undergraduate universities should strengthen education and intervention in the following areas:

### 5.1 Implement Mental Health Education to Enhance Emotional Recognition and Regulation

Utilize mandatory mental health courses, thematic lectures, and group counseling to help students recognize the connection between negative emotions and eating behaviors. Introduce tools such as emotion diaries to train students in accurately identifying and naming emotions. Teach adaptive emotion regulation strategies such as cognitive reappraisal and problem-solving to replace the emotional coping function of eating[11]. Mental health education should emphasize that emotional eating exists on a continuum from occasional behavior to clinical problems, reducing stigmatization and encouraging early help-seeking[7].

### 5.2 Promote the Concept of Mindful Eating to Foster Healthy Eating Behaviors

Offer elective courses or short-term workshops on mindful eating on campus, guiding students to attend to internal hunger signals rather than external emotional cues. Utilize meditation apps to support daily practice and encourage students to slow down their eating pace, distinguishing between physiological and emotional hunger. University counseling centers can provide mindful eating groups to serve students struggling with emotional eating. Research indicates that short-term mindfulness training can significantly reduce emotional eating scores among college students [23][24].

### 5.3 Optimize the Campus Food Environment to Provide Healthy Dietary Choices

Cafeterias should increase the availability of vegetables, fruits, whole grains, and high-quality proteins while reducing the availability of fried foods, sugary beverages, and high-calorie snacks. Implement nutritional labeling systems (e.g., green labels for healthy options) to guide students toward healthy food choices. Vending machines and campus convenience stores should also stock healthy options. Environmental interventions offer broad coverage at low cost and can influence the eating behaviors of all students.

### 5.4 Strengthen Public Education on Gut Health to Enhance Understanding of the Diet-Emotion Connection

Utilize lectures, popular science articles, and social media to disseminate knowledge about the gut-brain axis, helping students understand the mechanisms through which dietary patterns affect emotions. Organize activities such as "Healthy Eating Challenges" to encourage students to try the Mediterranean diet or consume probiotic foods while recording mood changes. Educational content should include: dietary fiber feeding beneficial bacteria, fermented foods supplementing probiotics, and high-sugar high-fat diets disrupting microbial balance, thereby enhancing students' intrinsic motivation to improve their diets[16][17].

### 5.5 Establish a Multidisciplinary Support System to Provide Early Intervention

Higher education institutions should integrate resources from counseling centers, university health services, and other relevant departments to establish multidisciplinary collaborative teams. Train counselors, dormitory supervisors, and faculty to identify early signs of emotional eating, such as significant weight changes, avoidance of social eating situations, and frequent expressions of guilt about eating. Counseling centers should provide assessment services, nutritionists should offer dietary guidance, and university health services should monitor physical health. For students meeting BED diagnostic criteria, timely referral to specialized mental health services should be arranged[7]. Multidisciplinary collaboration ensures that students receive comprehensive support from identification

through intervention..

## 6.Conclusion

Emotional eating triggered by Binge Eating Disorder represents a significant mechanism compromising mental health, involving complex interactions between inhibitory control, the reward system, and the gut-brain axis[14][16][17]. Negative emotions impair prefrontal regulatory function, overactivate reward circuitry, and disrupt gut microbiota balance, creating a self-perpetuating cycle of "emotion-binge eating-worsened emotion"[9][16]. Mindfulness training and healthy dietary interventions offer effective pathways to break this cycle[17][23].

Higher vocational colleges and undergraduate universities, as crucial frontiers for student mental health, should implement systematic educational interventions to help students establish healthy eating behaviors and emotion regulation capacities. These include conducting mental health education to enhance emotional recognition, promoting mindful eating to foster healthy eating behaviors, optimizing the campus environment to provide healthy dietary choices, strengthening public education on gut health to enhance intrinsic motivation, and establishing multidisciplinary support systems to provide early intervention[7][8]. Through these measures, higher education institutions can not only prevent and intervene in emotional eating but also promote students' comprehensive physical and mental health development, laying the foundation for their lifelong well-being. Future research should focus on child and adolescent populations, develop interventions not primarily focused on weight, and explore the synergistic effects of mindfulness and dietary interventions[7].

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