

# Characteristics of Binge Eating Disorder and the Effectiveness of Cognitive Behavioral Therapy with College Students Prone to BED

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Purpose of this study is to demonstrate severity of Binge Eating Disorder (BED) is different from that of general obesity and to examine the effects of Cognitive Behavioral Therapy (CBT) on BED-prone college students. To do this, the following scales were used: Binge Eating Scale, Rosenberg Self-Esteem Scale, Social Discomfort Scale, Barratt Impulsiveness Scale and Dutch Eating Behavior Questionnaire. Study I investigated pathological eating behaviors as well as psychological distress in three different groups: two obese groups with and without BED and a healthy control group. Ten participants for each group were selected: two obese groups among 50 obese women from a weight clinic in South Korea and the healthy control group with normal weight among a college population in South Korea. The findings showed that BED patients had more pathological eating behaviors and psychological distress than the other two groups. Most BED patients want weight-loss treatment when they seek help. However, the study suggests that treatment for BED should first be directed at the disordered eating and associated psychopathology rather than the obesity itself, even though BED patients are found in obese population. In Study II, 24 BED-prone college students among 600 college students were randomly assigned to CBT

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(eight weekly sessions during active treatment) or to no-treatment control group. At the end of the active treatment, binge eating was significantly reduced among those actively treated relative to those on no-treatment control group. Furthermore, CBT produced significant or at least marginally significant improvements in all psychological variables (self-esteem, impulsiveness, and social discomfort) relative to baseline, and they even improved more at the 6-week follow-up. The results support the efficacy of CBT as a preventive intervention for BED-prone college students. In spite of its several limitations, the present study clarifies the distinctiveness of BED from obesity in psychological factors along with pathological eating problems and recommends CBT as an effective treatment for BED-prone individuals.

*Keywords* : *Binge Eating Disorder, Cognitive Behavioral Therapy, Obesity, Self-esteem, Impulsiveness, Social Discomfort, Emotional Eating*

As contemporary culture increasingly values external physical appearance such as beauty and a slim figure, the desire to be thin, especially among women, has become one of the important characteristics of today's society (Puhl & Latner, 2007). A research from Harris Interactive Surveys of 1,059 girls in the United States found that between 2000 and 2006, the percentage of girls who believe that they must be thin to be popular had rose from 48% to 60% ("Girls And Body Image," n.d.), and this growing trend is no different in South Korea. Paradoxically, the prevalence of obesity has also been growing even though most women wish to be thin. In the case of the United States, more than half of the citizens are overweight ("Obesity and Overweight for Professionals," n.d.). The Ministry of Health and Welfare (2009) in South Korea found that adult obesity had increased from 28% (1998) to 31.3% (2009) because of a large caloric intake combined with

lack of exercise. How can we explain this paradoxical situation? Why do women become obese in spite of their desire to be thin? This phenomenon should be explored from various angles, including physical, psychological, and social aspects.

Obesity is a chronic disease with a high prevalence and complex etiology ("Obesity and Overweight for Professionals," n.d.). Obesity is known as a risk factor in various adult diseases such as diabetes, angina, myocardial infarction, and stroke (Brownell & Wadden, 1992) and is also strongly associated with the development of certain forms of cancer and of sleep and breathing disorders (Tanco, Linden, & Earle, 1998). On top of that, it damages person's psycho-social function as well as quality of life (Tanco et al., 1998).

It has been noticed that some obese individuals tend to overeat when they have emotional problems or difficulties, and also have

some psychological traits such as impulsivity, low self-esteem, depression, body dissatisfaction, and perfectionism (Pratt, Telch, Labouvie, Wilson, & Agras, 2001). These psychological traits are strongly associated with eating disorders (EDs). Research on the prevalence and severity of obesity has found that obesity has some features similar to EDs. EDs associated with obesity are binge eating disorder (BED) and night eating syndrome (NES<sup>1</sup>) (Grilo & Masheb, 2004). Although BED has become an emerging issue in the study of obesity in the West, little research has been done about BED in South Korea. Instead, previous studies about EDs have focused more on anorexia nervosa (AN) and bulimia nervosa (BN) than on BED.

BED is a provisional disorder within DSM-IV it is not yet classified as a distinct and formal diagnosis but criteria set in need of further study (*4th edition Diagnostic and Statistical Manual of Mental Disorders DSM-IV-TR Fourth Edition by American Psychiatric Association (Author), n.d.*). Early clinical descriptions discovered that a distinct subgroup of obese patients evidenced recurrent BE but did not purge (Cooper & Fairburn, 2003), and this came to be known as BED.

DSM-IV defines BED as experiencing recurrent episodes of BE in a discrete period of time (2 hours) and also as experiencing a loss of control over eating during these episodes. BE must be associated with three or more of the following: 1) eating much more rapidly than normal, 2) eating until feeling uncomfortably full, 3) eating large amounts of food when not feeling physically hungry, 4) eating alone because of being embarrassed by how much one is eating, or 5) feeling disgusted with oneself for overeating. In addition, BE behavior occurs at least twice a week for six months (*4th edition Diagnostic and Statistical Manual of Mental Disorders DSM-IV-TR Fourth Edition by American Psychiatric Association (Author), n.d.*).

BED, BN, and AN share a few common features (e.g., self-evaluation is unduly influenced by body shape and weight), and both BED and BN are characterized by recurrent BE. BN, however, must be followed by some form of compensatory behavior (e.g., self-induced vomiting, laxative abuse, fasting, or excessive exercise) to counter the large amount of food eaten (*4th edition Diagnostic and Statistical Manual of Mental Disorders DSM-IV-TR*

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1) NES primarily characterizes an ongoing, persistent pattern of late-night ED, and is strongly associated with insomnia (Grilo & Masheb, 2004). NES was originally described by Dr. Albert Stunkard in 1955 and is not included in DSM-IV because its validity and clinical utility have been questioned (Grilo & Masheb, 2004). According to the study of Gluck, Geliebter, and Satov (2001), individuals with NES were shown to have higher scores for depression and low self-esteem, and were less hungry during the day than those without NES. Furthermore, the study of Gluck et al., (2001) showed that individuals with NES had less weight loss compared to the control group in the controlled meal program.

*Fourth Edition by American Psychiatric Association (Author)*, n.d.). In other words, even though the BED diagnosis is similar to BN in a variety of ways, there is one major difference between the two: BN exhibits compensatory behaviors whereas BED does not. Dingemans, Spinhoven, and van Furth (2006) found that patients with AN or BN had more severe maladaptive core beliefs than those with BED. These data demonstrates the importance of identifying purging and fasting as significant clinical markers. Nevertheless, patients with BED had significantly higher maladaptive core beliefs than healthy control participants. Furthermore, according to Waller et al. (2003), patients with BED had even higher scores on three subscales (failure-to-achieve, dependence/incompetence and entitlement) among 16 core beliefs than patients with BN.

BED occurs at nearly twice the frequency of BN and AN combined (Hudson et al., 2007). The prevalence of BED in the general population is 0.7-4% while that of BED among those seeking weight-loss treatment, is approximately 15% to 30% (Spitzer et al., 1993). From another study, its prevalence is about 8% in the overweight population and is over 25% in obese individuals participating in weight-loss clinics (Spitzer, et al., 1993). In terms of gender ratio, the prevalence of females is half as much again as that of males (Bruce & Agras, 1992). It is necessary to focus on BED in more detail.

There are three etiological models of BED: the restraint model, the affect regulation model, and the escape model. According to Heatherton, Herman, Polivy, King, & McGree (1988) the restraint model proposes that cognitive control plays a more influential role than physiological hunger or satiation in food intake regulation among those who chronically diet. As long as dieters think they are in control they will not overeat, but when their diets are violated, they overeat or even binge. However, the association between restraint and BE does not apply to a substantial number of individuals with BED (e.g., Fairburn & Cooper, 1993). Further, in BED there is evidence that the onset of BE precedes that of dieting in about 35% to 65% of the cases (Abbott et al., 1998; Grilo & Masheb, 2000; Marcus, Moulton, & Greeno, 1995).

The affect regulation model posits that emotional disturbance and coping deficits precipitate the possibility of BE (Grilo, Shiffman, & Carter-Campbell, 1994). At the same time, BE functions to alleviate negative affects such as depression, anger, and anxiety because foods are used for comfort or distraction (Hawkins & Clement, 1984). Many studies have found that increases in negative affect represent a proximal antecedent to BE (Arnow, Kenardy, & Agras, 1992; Bruce & Agras, 1992; Davis & Jamieson, 2005; Lynch, Everingham, Dubitzky, Hartman, & Kasser, 2000; Mitchell, Hatsukami, Eckert & Pyle, 1985,

Haedt-Matt & Keel, 2011). The mechanism by which negative affect can lead to BE is explained by the "exchange theory" (Williamson, Zucker, Martin, & Smeets, 2001), which means that negative affects prior to BE are regarded as more aversive than the later affect of a sense of guilty due to the BE. The binge eater, therefore, exchanges more aversive affects for less aversive ones through BE.

The escape model (Heatherton & Baumeister, 1991) proposes that binge eaters subordinate themselves to a high standard and that an aversive affect arises when they do not meet this standard. When they are in the state of negative affect after personal failures or an inappropriate recognition about themselves, they become susceptible to external food cues. At this point, binge eaters try to avoid the higher level of thoughts by narrowing their cognitive attention from negative emotions to the immediate environment, which is food. This is because facing aversive self-awareness is very painful for them (Lee, 2001). In order to escape from these negative affects and in order to reduce their self-awareness, they go on a binge. Although binge eaters express their enmity and impulsivity indirectly and avoid more important matters by recurrent BE, such effects are only transient: so the sense of guilt, self-condemnation, and depressed emotions follow right after the BE (Elmore & De Castro, 1990; Hawkins & Clement 1984; Thompson, Berg, & Shatford, 1987).

Therefore, it is apparent that psychological aspects play a pivotal role in BED.

Patients with BED show low self-esteem, high impulsivity, social discomfort, depression, perfectionism, and anger are also associated with BE (Brown, Waller, Meyer, Bamford, Morrison, & Burditt, 2003; Fassino et al., 2003). This study, therefore, was designed to examine three characteristics of BED; self-esteem, impulsivity, and social discomfort. First, self-esteem reflects a person's overall positive or negative evaluation or appraisal of his or her own worth (Hewitt, 2009). Since the concept of self is influenced by various factors such as a person's physical appearance, social identity, and systematic and personal relations, low self-esteem can be caused by not being satisfied with these factors (Hewitt, 2009). In addition, low self-esteem is associated with feelings of sadness, loneliness, and nervousness (Hewitt, 2009). Obesity is another big issue that affects low self-esteem today, because it triggers verbal abuse or negative bias (Puhl & Latner, 2007). As stated by Sanftner and Crowther (1998), binge eaters have a high-level of depression and humiliation, and low self-esteem before BE. In particular, those with low self-esteem feel worthless and suffer from distorted body image, self-dissatisfaction, and self-humiliation (Lee, 2001). Several Korean studies comparing BE groups and non-BE groups also showed that binge eaters had

significantly lower self-esteem than non-binge eaters (e.g., Lee, 2001).

Second, impulsivity is characterized by the inclination of an individual to initiate behavior compulsively without adequate forethought about the results of their actions (Barratt, 1993). In its subtypes, a 3-factor model has been proposed: attentional (getting easily bored), motor (going into action) and cognitive (inability to plan) factors (Evdenden, 1999). Like low self-esteem, impulsivity has been related to BE through various studies (Keel & Mitchell, 1997; Steiger, Gauvin, Jabalpurwala, Saguin, & Stotland, 1999). For example, Steiger et al., (1999) found that the urge to binge was higher prior to BE than at comparable times on binge-free days, and thus suggested that impulsivity may indicate the potential for BE.

Lastly, women with BED often report social discomfort or interpersonal distress (Steiger et al., 1999). For example, binge eaters report more stressful personal relations and social interactions than non-binge eaters (Steiger et al., 1999). In addition, individuals with BED report a higher prevalence of impaired relations with people and higher work impairments than non-binge eaters (Spitzer et al., 1993). According to a study by Stein et al., (2007), BE is triggered by difficult interpersonal experiences or feelings of loneliness. Due to their poor social adjustment and personal relations, binge eaters do not usually get

enough social support, and, in turn, this makes them continue with BE. In addition, problems in personal relations may cause low self-esteem and negative emotions that trigger BE (Lee, 2001). Various aspects of prevalence, etiology, and psychological factors of BED have been considered so far in this study. The following addresses the treatment of BED.

There are various treatments for BED such as CBT (Cognitive Behavioral Therapy), IPT (Interpersonal Psychotherapy), BWL (Behavioral Weight Loss), and DBT (Dialectic Behavioral Therapy) (Wilson, Grilo, & Vitousek, 2007). In a comparative study of treatments for BED, Blomquist et al., (2011) found that CBT was superior to BWL. The study shows that CBT reduced BE while BWL produced more weight loss than CBT during treatment. After treatment, however, the participants of BWL started to regain their weight while those of CBT kept off or even decreased their weight little by little. This implies that obese binge eaters will gain weight again after weight-loss treatment unless they get proper psychological treatment related to their BE. Blomquist et al., (2011), therefore, suggested the potential importance of prevention and early treatment intervention for BED to prevent excess weight gain. Furthermore, according to Peterson, Mitchell, Crow, Crosby, & Wonderlich (2009), a CBT treatment group with therapists had higher BE abstinence rates and, greater

reductions in BE frequency compared to the self-help treatment group. Another study conducted by Safer, Telch, & Agras (2001) found that DBT based on emotion regulation skills and strategies is effective and acceptable in treating the focal symptoms of BED, and is more helpful for the treatment of BED than BN.

Among these many possible approaches to treatments, CBT is widely used for the treatment of BE. Many psychologists also adopt CBT as the best established treatment for BED. The National Institute for Clinical Excellence (NICE, 2004) indicate that CBT is the best treatment for BED by assigning CBT a grade of "A". CBT generally produces remission rates of 40% to 60% and robust improvements in ED psychopathology (Wilson et al., 2007). Kim (2004) suggests that obesity education and treatment for BED should be added to CBT for the best results, since many people with BED are severely obese and have medical problems related to their weight. For these people, losing weight and keeping it off are important treatment goals. Nevertheless, the primary goal for the treatment should be related to BE and the person's inner problems. Even in a case of surgery or drug therapy, a combined psychological approach will improve the maximization of weight loss and quality of life related to psychosocial function and general health (Kim, 2004).

As noted above, individuals with BED suffer physically, psychologically, and socially from

recurrent BE. Therefore, this study attempts to investigate the severity of BED by comparing obese patients with and without BED and a health control group in regard to three psychological variables (self-esteem, impulsivity, and social discomfort). There is a lack of research on BED in South Korea; just a few studies have been conducted on BE, regardless of the presence of compensatory behaviors, and few studies have been conducted on BED. Although many studies have been carried out related to BED in the West, an ethnicity variable should be considered. Thus, it is necessary to determine whether the findings of research conducted in Western culture are adaptable to Koreans in the interpretation and use of the data. In addition, more research on BED is still required, since the DSM-IV categorized BED as a new diagnosis requiring further study and, as an example of Eating Disorder Not Otherwise Specified (ED-NOS) the criteria are described in an appendix, indicating that BED requires further research before it can be incorporated as a fully accepted category in the DSM. Thus, repeated studies are important to clarify the distinctive characteristics of BED both from BN and obesity. This study focuses on the latter issue (distinctiveness of BED from obesity) and also investigates the effectiveness of CBT as a preventive treatment for BED-prone individuals.

In Study I, eating behaviors (restrained

eating, emotional eating, and external eating) and psychological variables (low self-esteem, impulsiveness, and social discomfort) were explored in order to verify that obese patients with BED have these characteristics and suffer more than both obese patients without BED and normal-weight control participants. It is certain that obese individuals also suffer from various factors due to their weight and body image. Thus, the purpose of Study I is to investigate whether these variables are significantly different among the three groups.

In Study II, the effectiveness of CBT on BED-prone individuals was explored using a pre-post test design. Since previous research has shown that disordered eating behaviors occur frequently among college women (Hill, 2002) and during the course of the college experience (Drewnowski, Yee, Kurth, Krahn, 1994), undergraduate students are an important "at-risk" group that can develop in BED. Therefore, Study II chose participants among college students and explored how CBT would help them as a preventive treatment not only in their BE but also related psychological variables investigated in Study I.

## Study I

### Psychological Characteristics of People with BED

BE is an important behavioral component that

elevates obesity levels (e.g., Delinsky & Wilson, 2008; Lloyd-Richardson, King, Forsyth, & Clark, 2000). Studies show that approximately 15% to 50% of both obese men and women report engaging in BE among those who are seeking weight-loss treatment (Womble et al., 2001). On the other hand, Telch & Agras (1994) found that there is a significant positive relationship between BE severity and degree of psychiatric symptomatology.

According to another study of the characteristics of overweight women with BED and without BED (Johnson et al., 2003), overweight women with BED showed a higher Body Mass Index (BMI), became overweight earlier, and used unhealthier weight-loss methods than those without BED. Previous studies targeting BED patients in weight-loss programs found that they experienced high amounts of stigma and seemed to internalize society's anti-fat beliefs and prejudices (Friedman et al., 2005; Myers & Rosen, 1999).

In addition, participants with BED have a tendency to experience a negative affect in response to others' evaluation of their weight-related behaviors (Eldredge, Agras, Arnow, Telch, Bell, Castonguay, & Mornell, 1997). Individuals with BED are apt to become obese at a younger age than obese individuals without BED (Spitzer et al., 1993). In addition, they tend to start dieting at a younger age and to spend more time on fruitless attempts to lose



weight than obese individuals without BED (de Zwaan et al., 1994; Kuehnel & Wadden, 1994; Grissett & Fitzgibbon, 1996).

These studies enable one to presume that patients with BED would have more psychological distress than obese patients without BED and healthy control participants with normal weight. Since marked BED would be found in the obese population, the study of BED plays a pivotal role in the development of obesity research (Barnes, Masheb, White, & Grilo, 2011). Thus, the present researchers have tested the hypothesis that an obese BED group would experience more distress in eating behaviors and psychological variables compared to both an obese group without BED and to a healthy control group.

The hypotheses of Study I are as follows:

1. Participants would participate more in BE behaviors in the following order: BED group, obese group without BED, and normal weight group.

2. Participants would show lower level of self-esteem in the following order: BED group, obese group without BED, and normal weight group.

3. Participants would have higher level of impulsivity in the following order: BED group, obese group without BED, and normal weight group.

4. Participants would experience more of social discomfort in the following order: BED group, obese group without BED, and normal weight group.

5. Participants would show more problematic eating behaviors in the following order: BED group, obese group without BED, and normal weight group.

## Method

### Participants

As mentioned in the introduction, BED is associated with obesity and is known as an ED in the obese population. For this reason, a BED group and a non-BED obese group were selected from a local weight-loss clinic in South Korea. Unlike other eating disorders, BED develops in men as well as in women (American Psychiatric Association, 1994). However, only women were selected for this study because the participants made available at this clinic were mainly female.

BED patients (Group 1) were selected from 50 obese individuals who had not yet received any treatment at the clinic, and who met the criteria of BED based on the completed questionnaires and interview done by doctors of the clinic on the basis of the criteria in DSM-IV. Ten participants were assigned to the obese group without BED, not meet any criteria

of BED. Finally, 10 participants with normal weight and without any eating problems were selected from college population.

## Measures

**Body Mass Index** The body mass index (BMI) is a heuristic proxy for human body fat based on an individual's weight and height. BMI is defined as the individual's body weight (kg) divided by the square of his or her height (m<sup>2</sup>). A BMI of less than 18.5 is considered as underweight and a BMI between 18.5 and 25 is considered normal weight, while a BMI greater than 25 is considered overweight and a BMI above 30 is considered obese (World Health Organization, 1997). In regards to an individual's BMI score, this present study considers obesity to be any score over 25 used for Asians rather than the standard of over 30 used for Americans.

**Binge Eating Scale** This questionnaire developed by Gormally, Black, Daston, and Radin (1982) was used to assess the amount of BE among the participants. The present researchers used the Binge Eating Scale (BES) translated into Korean by Lee (2000). The BES measures the severity of BE without self-control and uses self-reported 16 items with four-point statements related to behavioral expressions, emotions, and cognitions about BE

(e.g., feeling guilty, fearful about not stopping eating). The cutoff point is 18 for moderate or severe BE. Higher total scores on the BES indicate higher BE (internal reliability via Cronbach's  $\alpha = .84$ ).

**Rosenberg Self-Esteem Scale** As an indicator of self-esteem, participants completed Rosenberg's self-esteem scale (1965) that was translated into Korean by Kim (1988). This scale is a 10-item Likert scale with items answered on a four-point scale -from strongly agrees to strongly disagree. This scale includes five positive self-esteem items and five negative self-esteem items, and the higher the score, the higher the self-esteem. The Cronbach's  $\alpha$  was .92 when Rosenberg designed this scale, and the 2-week test-retest coefficient was .85.

**Barratt Impulsivity Scale-11** The Barratt Impulsiveness Scale-11 was translated into Korean by Lee (1992) and used by this present study. BIS-11 is one of the oldest and most widely used measures of impulsive personality traits (Patton, Stanford, & Barratt, 1995). It includes 23 dichotomous items which are divided into three subscales: attentional impulsiveness scale (6 items), motor impulsiveness scale (8 items), and non-planning impulsiveness scale (9 items). Collectively, the three sub-dimensions represent a total impulsivity score. Item 1, 3, 4, 5, 6, 8, 9,

11, 19 are scored reversely and the rest are scored in the normal direction. The higher the score is, the higher the impulsiveness is. The Cronbach's  $\alpha$  of each subscale is .73 for attentional impulsiveness, with .70 for motor impulsiveness, and .50 for non-planning impulsiveness (Jung, 1997).

**Social Discomfort Scale** The social discomfort scale, one of the subscales of the MMPI, is an indicator of interpersonal relationships in social situations and measures the participant's interpersonal abilities. The 25-item scale with dichotomous questions assesses components of preference of being alone, difficulty in making friends, introversion, etc. Those who report high scores on this scale dislike social meetings or activities. Ten items need to be answered "yes" while the other 15 items are the opposite. The Cronbach's  $\alpha$  was .82 (Lim, 1998)

**Dutch Eating Behavior Questionnaire** This questionnaire was designed by Van Strien, Frijters, Bergers and Defares (1986), and translated into Korean by Kim and Lee (1996). The 33-item questionnaire with five Likert scales has three subscales: restrained eating scale (item 1 to 10), emotional eating scale (item 11-23), and external eating scale (item 24 to 33). Item 31 is the only reversed one, the rest of the items are normal-directed. The

Cronbach's  $\alpha$  of each subscale was .90 for the restrained eating scale, .93 for the emotional eating scale, and .79 for the external eating scale (Kim et al., 1996).

## Procedures

Fifty people who wanted to get weight-loss treatment at the clinic completed questionnaires. Their interviews were performed by doctors of the clinic. Participants provided self-reported height and current weight. No personal identifying information was collected. Among them, ten participants were assigned to Group 1 (BED group) and ten participants to Group 2 (obese group without BED). Thirty students from a local national university also completed questionnaires giving height and current weight. Ten healthy students among this group were selected to for Group 3 (healthy control group). After receiving the information, statistical analyses of one-way ANOVA and Scheffè's post hoc tests were performed by SPSS 10.0 for Windows.

## Statistical Analysis

A one-way ANOVA was used to verify whether the BED group showed more BE, maladjusted eating behaviors, low self-esteem, impulsivity and social discomfort than the obese group without BED and the normal weight

group. When the one-way ANOVA revealed significant overall group differences, Scheffé's post hoc tests were performed to determine which specific groups differed. The researchers did not want to make the type-I error of wrongly accepting differences between means as significant. Therefore, Scheffé's post hoc test was chosen among possible several post hoc tests, for there are complex comparisons evaluating differences of more than two means at a time. SPSS 10.0 for Windows was used for the statistical analysis.

## Results

Table 1 shows the means and standard deviations of height, weights, and BMI in each group. Table 2 shows the results of the one-way ANOVA and Scheffé's post hoc test in BE, self-esteem, impulsivity, and social discomfort of the three groups.

The analysis showed significant differences in BE for the ANOVA [ $F(2, 27) = 58.56, p < .01$ ], indicating at least one significant difference among the groups. In addition, Scheffé's post

hoc tests showed that all groups were significantly different. BE was highest in the BED group (29.2), followed by the obese group without BED (13.9) and then the normal weight group (7.6).

There were significant differences in self-esteem for the ANOVA [ $F(2, 27) = 10.61, p < .01$ ]. Scheffé's Post hoc tests showed that the BED group (23.30) was lower than the normal weight group (30.30) in self-esteem. However there was no significant difference in self-esteem between the BED group and the obese group without BED (26.80), nor, between the obese group without BED and the normal weight group.

Impulsivity across the groups showed significance as a result of the ANOVA [ $F(2, 27) = 9.36, p < .01$ ]. Scheffé's post hoc tests revealed that BED group (11.10) was higher in impulsivity than either the obese group without BED (6.20), or the normal weight group (6.80). This variable includes three subvariables (attentional, motor, and non-planning impulsivity). First of all, there was no significance in attentional impulsivity for the

Table 1 Means, Standard Deviations (SD) among Obese Groups with and without BED, and Normal Weight Group

	BED patients <i>M(SD)</i>	Obese group without BED <i>M(SD)</i>	Normal weight group <i>M(SD)</i>
Height (cm)	160.50 (3.81)	160.10 (4.86)	162.30 (2.71)
Weight (kg)	70.40 (6.54)	69.24 (5.22)	52.80 (2.66)
BMI	27.39 (2.04)	27.03 (1.76)	20.22 (.96)

ANOVA. However, in terms of the other two subvariables, the BED group (motor: 4.0, non-planning: 4.0) was higher both in motor impulsivity [ $F(2, 27) = 4.04, p < .05$ ] and non-planning impulsivity [ $F(2, 27) = 7.29, p < .05$ ] than the obese group without BED (motor: 2.1, non-planning: 2.3) and the normal weight group (motor: 2.0, non-planning: 2.6). However, there were no significant differences between the obese group without BED and the normal weight group in these two subvariables.

In regard to social discomfort, there were significances among the groups for the ANOVA [ $F(2, 27) = 10.17, p < .01$ ]. Scheffé's post hoc tests indicated that the BED group (15.50) showed a significantly higher level of social discomfort than both the obese group without BED (10.10) and the normal weight group (6.6). However, the other two groups, the obese group without BED and the normal weight group, were

not significantly different in social discomfort.

Finally, there was significance in the eating behaviors for the ANOVA [ $F(2, 27) = 15.28, p < .01$ ], indicating at least one significant difference among the groups. As shown in Scheffé's post hoc tests in Table 2, the BED group (96.30) was higher in three characteristics of eating behavior than the obese group without BED (69.30) and the normal weight group (63.70) in its overall scores. In terms of its sub-variables, there was no significant difference in restrained eating, but there were significant differences in emotional eating [ $F(2, 27) = 17.07, p < .01$ ], and external eating [ $F(2, 27) = 4.24, p < .05$ ] for the ANOVA. The BED group (emotional : 33.90, external : 31.70) was higher in emotional eating and external eating than the obese group without BED (emotional : 16.50, external : 24.80) and the normal weight group (emotional : 15.40, external : 25.40).

Table 2 The Result of One-Way ANOVA and Scheffé's Post Hoc Test based on the Variables across the Groups

	Obese group with BED (A)	Obese group without BED (B)	Normal weight group(C)	<i>F</i>	<i>P</i>	Scheffé's post hoc test
Binge eating	29.20	13.90	7.60	58.56**	.000	A > B > C
Self-esteem	23.30	26.80	30.30	10.61**	.000	A < C
Impulsivity	11.10	6.20	6.80	9.36**	.001	A > B, C
Attentional	3.10	1.80	2.20	1.82		
Motor	4.00	2.10	2.00	4.04*		A > B, C
Non-planning	4.00	2.30	2.60	7.29*		A > B, C
Social discomfort	15.50	10.10	6.6	10.17**	.001	A > B, C
Eating behavior	96.30	69.30	63.70	15.28**	.000	A > B, C
Restrained	30.70	28.00	28.90	3.17		
Emotional	33.90	16.50	15.40	17.07**		A > B, C
External	31.70	24.80	25.40	4.24*		A > B, C

\*  $p < .05$     \*\*  $p < .01$

**Discussion**

Study I investigated BE, self-esteem, impulsivity, social discomfort, and eating behaviors across the three groups (BED group, obese group without BED, and normal weight group). The first hypothesis was supported; participants engaged in more BE behaviors in the following order: BED group, obese group without BED, and normal weight group. The BED group was highest in BE, followed by the obese group without BED and the normal weight group. This finding is consistent with the previous study of Fassino et al., (2003) that found that obese individuals tend to participate in BE. BED is characterized by recurrent BE as stated in its criteria (American Psychiatric Association, 1994), so it is obvious that there is a positive relationship between BED and BE. However, this study was designed to investigate how BE differs between BED patients and obese individuals, and also, between obese individuals and normal weight

people. Although the BE scores of the obese group were significantly lower than those of the BED group, their BE scores were considerably higher than those of the normal weight group. In addition, compulsive BE, which is pathological behavior, will lead BED patients to gain weight more and more as times goes on even though their weight might be normal in the first stage of BED, because they do not use inappropriate weight-compensatory behaviors.

The second hypothesis was partially supported. The BED group had significantly lower self-esteem than the normal weight group. However, there were no statistically significant differences between the BED group and the obese group without BED, or between the obese group without BED and the normal weight group. Nevertheless, when considering the means of self-esteem in the groups (BED group: 23.30, obese group without BED: 26.80, and the normal weight group: 30.30) the sequence was the same as the second hypothesis stated. In other words, the BED

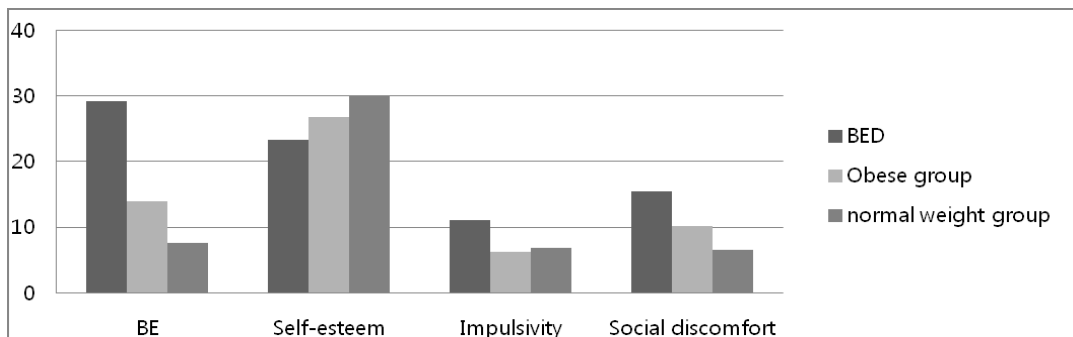


Figure 1. Means of Variables across the Groups

group was lowest in self-esteem, followed by the obese group without BED and then the normal weight group, although there was no statistical significance. Moreover, previous research has shown that obesity can trigger feelings of low self-esteem (e.g., Puhl et al., 2007; Goldstein et al., 2008), unlike the result of this study. Since there were only 10 participants in each group, it might be failed in finding significant differences between the obese group without BED and the normal weight group. Another possible explanation may be the use of Scheffé's post hoc test because it exposes more type-II error of not identifying significant differences when they do exist. At any rate, this variable needs to be examined again with a larger same size in further research.

The third hypothesis was partially supported. The BED group reported significantly higher impulsivity than both the obese group without BED and the normal weight group. This is consistent with the study of Steiger (1999), which found that the highly impulsive group showed higher scores in every eating problem than the group with low impulsivity. This is also consistent with the study of Lee (2001), which found that the higher the impulsivity, the higher the BE. However, there was no significant difference between the obese group without BED and the normal weight group. This implies that obesity has no particular trait

of impulsivity compared to the normal weight group, and this is not consistent with the study of Pratt et al., (2001). More research is needed related to this variable in order to determine the relationship of impulsivity to obesity.

The fourth hypothesis was partially supported. BED group would experience more social discomfort than the obese group without BED and the normal weight group. BED patients are not comfortable being with others due to their heavy weight as well as BE, and this, in turn, gives them more stress that triggers BE in a vicious circle, regardless of which is the first. However, there was no statistically significant difference between the obese group without BED and the normal weight group. Even so, in regards to their mean scores on this variable, the obese group without BED showed more social discomfort than the normal weight group. In general, this tendency may come from social bias and negative views of obesity even though this study failed to find significant differences in social discomfort between the obese group without BED and the normal weight group. The result of this variable is just like that for self-esteem in the opposite direction as shown in Figure 1, and thus, it needs further research.

The fifth hypothesis was partially supported. There were significant differences between the BED group and the other two groups, but no differences were found between the obese group

without BED and the normal weight group. For subvariables, there were significant differences in emotional eating and external eating while no difference was found in restrained eating. Therefore, it is reasonable to think that BED individuals engage in BE not because they restrain foods but because they have emotional difficulties and do not know how to deal with them properly. This is consistent with the previous research of Castonguy, Eldredge, and Agras, (1995), which did not support the restraint model for BED because BED patients did not report restrained eating in their research. However, negative affect can cause BE in the emotional eating variable, showing distinct differences between the BED group and the other two groups. This result corresponds with previous studies supporting the affect regulation model (e.g., Abraham et al., 1982; Haedt-Matt et al., 2011). BED individuals distinctively differ from BN individuals who alternately engage in BE and purging in order to meet the social pressure regarding body

shape. BED individuals are involved in recurrent BE in order to resolve their negative emotions without compensatory behaviors, and they accordingly become obese. In this study, however, there was no difference between the obese group without BED and the normal weight group in pathological eating behaviors even though the obese group without BED participates more in BE compared to the normal weight group. The overeating of obese people without BED may be a habit not related to any eating problems.

When considering all the results, the study showed significant differences between the BED group and the obese group without BED in BE, self-esteem, impulsivity, social discomfort, and eating problems. The BED group suffers more, not only in pathological eating behaviors but also in psychological variables. It has not been clearly verified whether such psychological problems are the cause of BED or the effect of BED, but it is certain from this study that self-esteem, impulsivity, and social discomfort

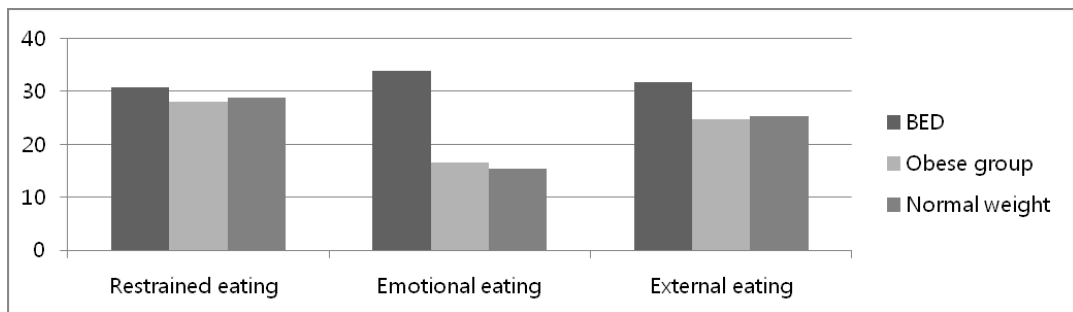


Figure 2. Means of Subvariables in Eating Behaviors across the Groups



are closely associated with BED.

Another finding of this study is that there were no significant differences except BE between the obese group without BED and the normal weight group. However, this might be due to the extremely small sample size, because previous research has shown obesity as a critical disease (e.g., Puhl et al., 2007; Centers for Disease Control and Prevention, 2009). Nevertheless, the obesity research did not exclude those with BED, and it has been suggested that BED plays a significant role in the severity of obesity especially in obesity related to psychological factors (Hasler et al., 2004). Therefore, comparative research is required between obese individuals having no EDs and healthy, normal individuals in order to investigate the pure difference with a large sample size.

A number of limitations of the present study need to be addressed. First, Study I has a limitation of generalization due to the recruitment of participants. The obese participants were all chosen from patients at a local obesity clinic, and the normal weight participants were selected from a sample of college students. Therefore, it would be hard to believe that the participants represent the traits of the three groups respectively. Second, the sample size was too small. However, other studies have used a small sample size. For example, Dingmans and van Furth (2006)

investigated maladaptive core beliefs and eating symptoms across four ED groups, and the number of participants in each group was 17, 31, 23, and 36 respectively, which are low numbers although larger than the present study. At any rate, for a better understanding of the issues, a replicated study with a bigger sample size is needed. Third, because those who came to the clinic to get help were all women, male participants were excluded in this study, limiting the generalizability of the findings. Future studies, therefore, need to include male participants among BED patients and to study possible gender-related differences.

In terms of strengths, first, the participant of this study has not been researched enough in South Korea. Second, this is a comparative study with three groups (two groups of obese participants those with and without BED as well as a normal weight group). As mentioned above, BED individuals have played a crucial role in the study of obesity due to their pathological eating behaviors and psychological problems. Hence, the comparison between the obese groups with and without BED is especially meaningful in understanding Korean BED patients. Third, this study considered not only eating problems (restrained eating, emotional eating, and external eating) but also psychological factors (self-esteem, impulsiveness, and social discomfort) in order to verify the characteristics of BED. Finally, this

study suggests the importance of checking for the presence of BED when an obese person comes to a clinic seeking weight-loss treatment. Patients with BED suffer from two main problems: BE and obesity. However, the first aim of treatment for BED should be the cessation of BE through psychotherapy, focusing on his or her psychological dysfunctions that trigger BE. Without proper treatment of the BED, he or she will easily gain weight again, even after losing some weight through weight-loss treatment or other methods.

## Study II

### The Effects of Cognitive Behavioral Therapy on College Students Prone to Binge Eating Disorder

Cognitive Behavioral Therapy (CBT) is a semi-structured and problem-oriented treatment, mainly concerned with the present and future rather than the past. CBT is effective in the treatment of a variety of conditions, including mood, anxiety, personality, eating, substance abuse, etc. (National Institute for Clinical Excellence, 2004). The premise of cognitive behavioral therapy is that changing maladaptive thinking leads to change in affect and in behavior. Therefore, therapists use CBT techniques to help individuals challenge their patterns and beliefs and replace irrational

mechanism with realistic thoughts and behaviors (Wilson, Grilo, & Vitousek, 2007).

Standard CBT treatments for BED typically range from 12 to 20 sessions (e.g., Grilo, Marheb, & Wilson, 2005; Munsch, Biedert, Meyer, Michael, Schlup, & Tuch, 2007). However, short-term treatments for BED also produce comparable outcomes. For example, the findings from the study of Schlup, Munsch, Meyer, Margraf, & Wilhelm (2009), support the efficacy of the 8-week CBT for core symptoms of BED as well as depression and life satisfaction as secondary treatment outcomes. Besides, shorter treatments are likely to be more cost-effective than longer interventions (Wilfley, 2002).

The group CBT for BED in this study consisted of three phases. In the first phase, the main goal was for the participants to develop a regular eating pattern and to resist the urge to engage in BE. Patients learned to identify and correct dysfunctional cognitions and avoidance behaviors related to eating. Another goal was to replace these behaviors with healthier, self-enhancing responses. In the second phase underlying problems such as body image, self-esteem, stress management, problem solving, assertiveness and weight-loss issues were addressed. The third and last phase of the treatment was concerned with relapse prevention after the end of treatment. Homework assignments were part of all sessions.

Feedback was given on the food diaries and homework assignments.

As found in study I, there was a greater gap between the BED group and the obese group without BED than that between the obese group without BED and the healthy control group. Although obese individuals need treatment interventions for their physical, psychological, and social problems due to health issues, and the social bias and pressure they experience, BED patients need appropriate interventions of treatment different from general treatment for obesity because they have more pathological eating behaviors (especially when they are emotionally disturbed as shown in Study I) as well as greater psychological distress (lower self-esteem, higher impulsivity, and less satisfactory personal relations) than obese individuals and those of normal weight. This present study explored how effective CBT is for BED-prone individuals.

Psychological and interpersonal stressors abound in the university setting, leaving undergraduate women vulnerable to negative outcomes such as BE (Cheng & Mallinckrodt, 2009). The average age of onset for BED is between 18 and 29 (Nelson, Story, Larson, Neumark-Sztainer, & Lytle, 2008; Racette, Deisomger, Strube, Highstein, & Deusinger, 2008). Research shows that 38% of undergraduate women in America report having a problem with BE (Mintz & Betz, 1988).

Furthermore, research suggests that being overweight or obese typically takes a lifelong course, that is, body weight continues to increase until approximately age 50 to 60 (Kopelman, 2000). This also emphasizes the importance of early treatment. Accordingly, this present study recruited undergraduate students as participants.

To summarize, study II explores whether there would be significantly different changes in the BE behaviors of BED-prone college students between the CBT group and the no-treatment control (NTC) group after CBT treatment. In addition, this study hypothesizes that the self-esteem, impulsivity and social discomfort of the CBT group will also get better along with BE after the treatment as secondary outcomes.

The hypotheses of Study II are as follows:

1. BE of the CBT group would be decreased compared to that of the NTC group after treatment.
2. Self-esteem of the CBT group would be increased compared to that of the NTC group after treatment.
3. Impulsivity of the CBT group would be decreased compared to that of the NTC group after treatment.
4. Social discomfort of the CBT group would be decreased compared to that of the NTC

group after treatment.

## Method

### Participants

Participants were 24 college students out of 600 who scored over 18 on the Binge Eating Scale, the cutoff point that indicates moderate or severe BE behavior. They were randomly assigned to either immediate CBT treatment or to NTC 12 in each group. There were 4 males and 8 females in the CBT group while there were 3 males and 9 females in the NTC group. The ages of the participants were between 20 and 28. Those with any inappropriate weight-compensatory behaviors, a necessary diagnosis criterion of BN, were excluded.

### Measures

The same scales from Study I, except the Dutch Behavioral Eating Questionnaire, were used in this study: BMI, Binge Eating Scale, Rosenberg Self-esteem Scale, Barratt Impulsivity Scale-11, and Social Discomfort Scale.

### Procedure

The Binge Eating Scale (BES) was completed by 600 college students enrolled in psychology

classes during the fall semester at a national university in South Korea. They were asked to fill out the questionnaire after a class. 73 out of 600 met the BED-prone criterion with a score of over 18 on the questionnaire and did not report any inappropriate weight-compensatory behaviors. Out of these 73 participants, 24 students agreed to participate in the treatment when they were contacted by telephone. The participants were asked to complete baseline assessments using the Self-esteem, Impulsiveness and Social Discomfort scales. Afterward, they were randomized to 12 in CBT and 12 in NTC. The active treatment consisted of 8 group sessions of 90 minutes' duration over a 7-week period, with weekly sessions for the first 6 weeks and two sessions during the last week, when lectures at the university began. During the treatment, 4 from the CBT group and 3 from the NTC group dropped out. The treatment was provided by the main present researcher with help from two graduate students studying clinical psychology.

Written informed consent was obtained during the orientation meeting after a complete description of the study was given to the participants. A treatment program handbook with homework assignments and a meal-diary book were given to each participant. Those who had to miss a CBT group session due to personal reasons got individual treatments to avoid any difficulties with the next session.

Assessments were repeated right after the final session of the treatment and 6 weeks later since the treatment was closed. However, a 6-week follow-up was completed only by the CBT group individuals, and one of them dropped out at follow-up. The CBT carried out by this study was redesigned by the researcher using the guidelines of the CBT program by Kwon (1999) and the short term psycho-education program by Lee (2001) along with other references about CBT.

## Results

A paired-Sample's *t*-test was used to explore the effects of CBT on the BE, self-esteem, impulsivity, and social discomfort of BED-prone college students. For group comparisons, an independent *t*-test was conducted with a significance level of .05. SPSS 10.0 for Windows was used for statistical analysis.

Table 3 demonstrates the results of the *t*-test between groups to verify the

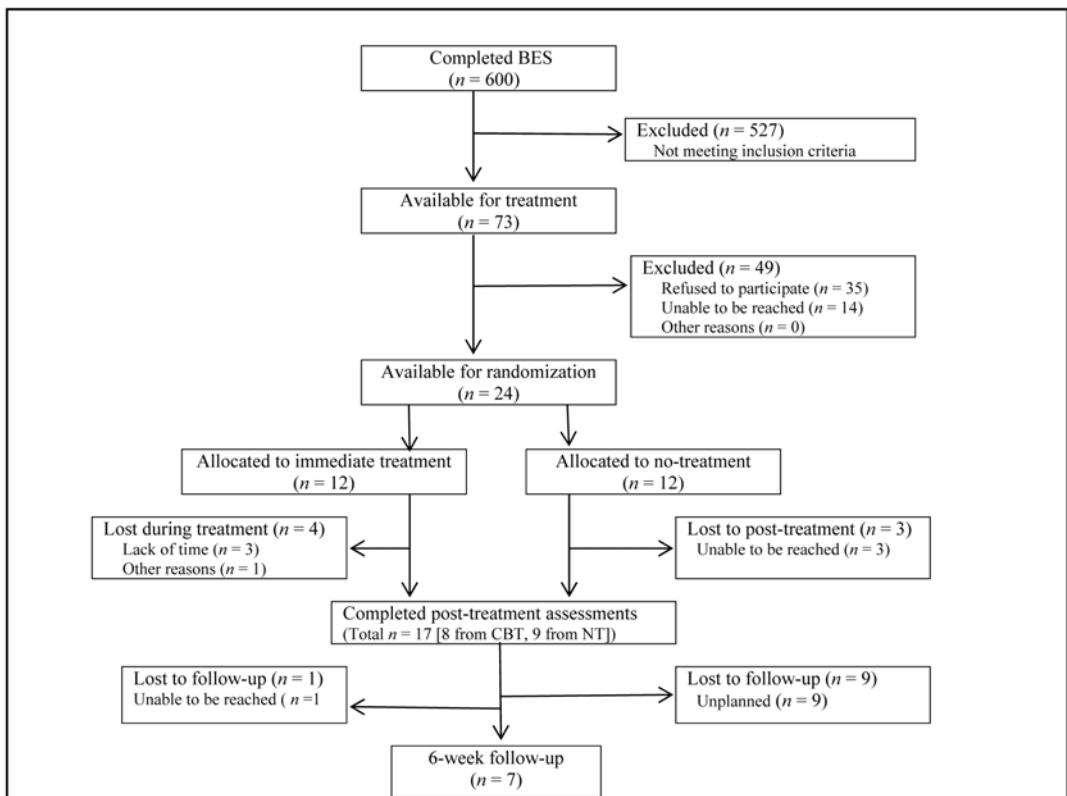


Figure 3. Summary of Participant Flow

homogeneity of the CBT group and the NTC group in the BE, self-esteem, impulsivity, and social discomfort. As shown in Table 3, there were no statistically significant differences between the groups in terms of baseline measures of the BE, self-esteem, impulsivity, and social discomfort. This verified the homogeneity of the two groups. Therefore, the statistical change scores completed after the CBT treatment can be interpreted as reflecting

the effects of treatment.

Table 4 provides the results of a paired samples *t*-test to verify if there are statistically significant differences between groups in BE, self-esteem, impulsiveness, and social discomfort at post-treatment. The BE behaviors of the CBT group were significantly less than those of the NTC group [ $t = 4.35, p < .01$ ]. The self-esteem of the CBT group was not significantly increased over that of the NTC

Table 3. The Homogeneity Verification of Pretreatment Scores on Variables between Groups

	CBT	NT	<i>t</i>	<i>P</i>
	<i>M (SD)</i>	<i>M (SD)</i>		
BE	21.63 (3.93)	19.56 (1.59)	1.46	.167
Self-esteem	26.63 (4.34)	27.89 (4.48)	-.59	.57
Impulsivity	11.38 (3.24)	9.11 (3.55)	1.37	.19
Social discomfort	12.5 (6.09)	10.00 (8.09)	.71	.49

\*  $p < .05$  \*\*  $p < .01$

Table 4. Changes between Groups in BE, Self-esteem, Impulsivity, and Social Discomfort

	CBT	NT	<i>t</i>	<i>p</i>
	<i>M (SD)</i>	<i>M (SD)</i>		
BE	8.00 (4.66)	.78 (1.72)	4.35**	.001
Self-esteem	-1.86 (2.30)	.22 (5.85)	-.95	.358
Impulsivity	2.00 (2.07)	.33 (1.87)	1.74	.102
Social discomfort	3.75 (4.03)	.33 (2.29)	2.18*	.045

\*  $p < .05$  \*\*  $p < .01$

Table 5. Study Variables across Treatments at Pretreatment, Post-treatment, and 6-week Follow-up

	Pretreatment	Post-treatment	6-week follow-up	Changes within groups ( <i>t</i> )	
	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	Pre-Post	Pre-Follow-up
Binge eating	21.63(3.93)	13.63(4.50)	11.43(5.03)	4.86**	5.87**
Self-esteem	26.63(4.34)	28.50(4.75)	30.14(3.24)	-2.31	2.86*
Impulsivity	11.38(3.24)	9.38(2.20)	8.00(2.24)	2.73*	3.57*
Social discomfort	12.50(6.09)	8.75(6.27)	8.29(4.61)	2.63*	2.24

\* $p < .05$  \*\*  $p < .01$

group. The impulsivity of the CBT group was not significantly decreased compared to that of the NTC group. The social discomfort of the CBT was significantly decreased compared to that of the NTC group [ $t = 2.18, p < .05$ ].

Table 5 summarizes the changes across pretreatment, posttreatment, and 6-week follow-up through a paired sample  $t$ -test within groups. The BE of the CBT group was significantly decreased at the time of the posttreatment (13.63) compared to pretreatment (21.63) [ $t(7) = 4.86, p < .01$ ], and the effect remained at the time of the follow-up (11.43) [ $t(7) = 5.87, p < .01$ ]. The self-esteem of the CBT group was marginally improved at post-treatment (28.50) at compared to

pretreatment (26.63). The impulsivity of the CBT was significantly decreased at post-treatment (9.38) compared to pretreatment (11.38) [ $t(7) = -2.73, p < .05$ ], and it had decreased even more at the 6-week follow-up. The social discomfort of the CBT group was also significantly decreased at post-treatment (8.75) compared to pretreatment (12.50) [ $t(7) = -2.63, p < .05$ ].

### Discussion

The Study II examined the efficacy of CBT, consisting of eight weekly sessions during the active treatment, compared to the NT. The first hypothesis was supported; the BE of the CBT

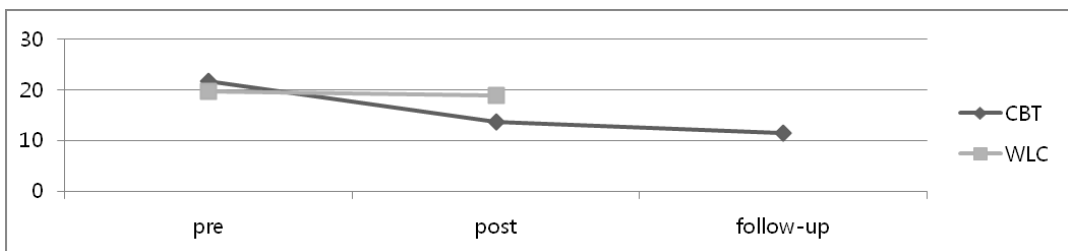


Figure 4. Binge Eating Scores at Pretreatment, Post-treatment, and 6-week Follow-up

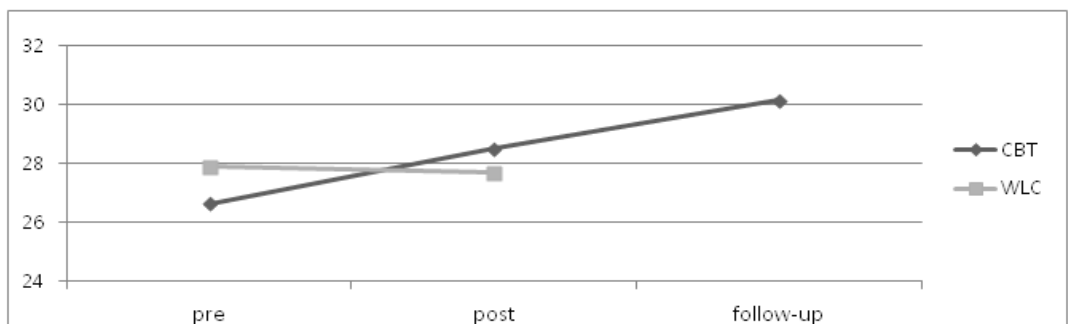


Figure 5. Self-esteem Scores at Pretreatment, Post-treatment, and 6-week Follow-up

group decreased compared to that of the NT group. The results show a fast and significant reduction of BE within 8 sessions, and this is consistent with the previous study of Schlup et al., (2009) that found a short version of CBT resulted in marked improvements in core symptoms of BE relative to the baseline. It is possible that the participants increased their self-control related to BE by finding out about their false beliefs through CBT and checking carefully the conditions that led them to participate in BE. In addition, the observation of their eating problems and the daily practice of

writing a meal-diary was helpful for them in eliminating BE. There were further secondary treatment outcomes, including increased self-esteem and lowered impulsivity and social discomfort.

The second hypothesis was not supported. The change in self-esteem of the CBT group did not significantly increase over than that of the NTC group. Nevertheless, when considering the change in self-esteem at the time of follow-up, there were significant differences in self-esteem through with-in-group analysis compared to the baseline. This shows that there

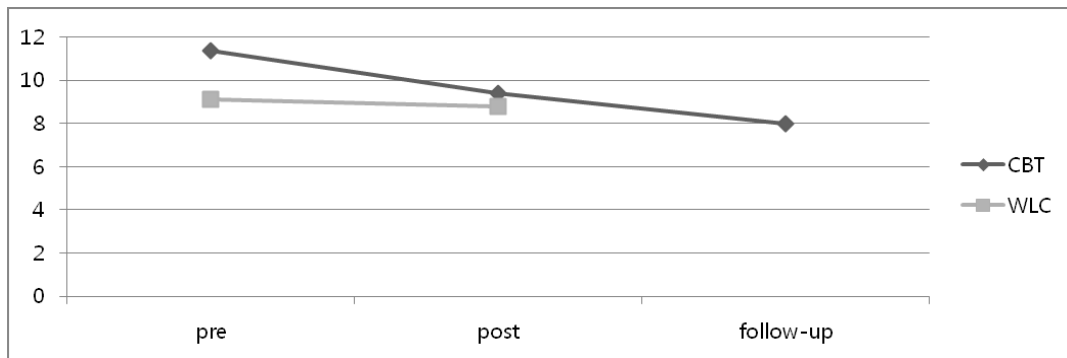


Figure 6. Impulsivity Scores at Pretreatment, Post-treatment, and 6-week Follow-up

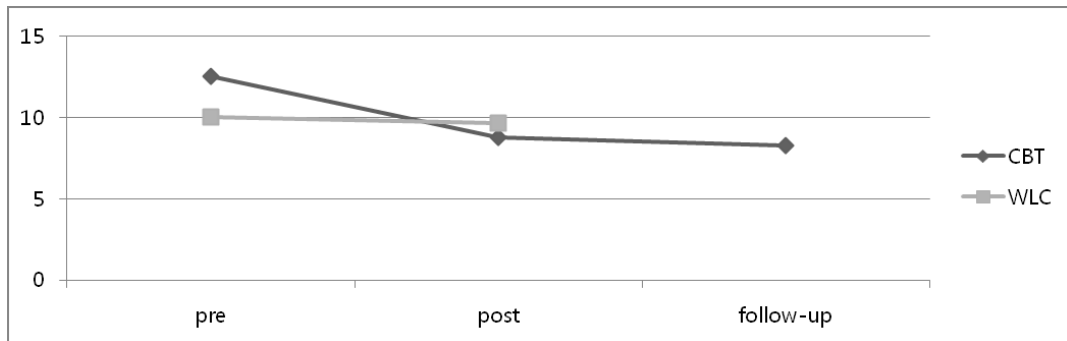


Figure 7. Social Discomfort Scores at Pretreatment, Post-treatment, and 6-week Follow-up



were no immediate effects on participants' self-esteem right after the treatment, but their self-esteem naturally improved by the time of 6-week follow-up. Their self-esteem might increase more later on as they were able to control their BE problems better in daily situations after the treatment.

The third hypothesis was not supported. Impulsivity of the CBT group did not significantly decrease compared to that of the NTC group. However, the change in total impulsivity scores decreased significantly in terms of the within-group statistics, even though no differences were found in the subscales of impulsivity. With possible natural changes in the NTC group, there were no statistically significant differences found between the groups. However, when considering the significant decreases within the group, CBT seems to be effective to a certain degree in decreasing impulsivity of BED-prone individuals. It is considered that impulsivity was decreased as participants changed their negative automatic thoughts into rational thoughts by thinking of results caused by impulsive behaviors and by finding alternative behaviors.

The fourth hypothesis was supported; social discomfort of the CBT group decreased compared to that of the NTC group. This could be due to their control over BE or to their reconceptualization learnt through the sessions of CBT. Furthermore, the effects remained at

the time of 6-week follow-up.

This study shows the efficacy of the short version of CBT; all variables were statistically significant or marginally significant, as shown in Figure 1 through 4. This finding is consistent with the study of Munsch et al., (2007) that treatment outcomes of the 8-session CBT were somewhat lower, but still comparable to 16-session CBT. Shorter treatments are less expensive and easier to deliver, thus more readily available for more patients suffering from BED or BE. However, because the participants of Study II were BED-prone individuals instead of BED individuals, the results of the CBT seem to be effective. In addition, individual treatment was combined with group therapy in this study because participants missed group sessions due to personal circumstances. In individual treatment, participants could have focused more depth on their psychological problems with the therapist, and this might have led to better results. Nevertheless, in the cases of self-esteem and impulsivity, there were only marginal changes and not significant differences between the two groups. A duplicated study is needed to evaluate these variables in order to investigate whether or not secondary treatment outcomes can be produced in these variables through CBT.

Study II has a number of limitations that should be considered when interpreting the

results. First, the participants for this study were selected from students at a national university. Thus, participants cannot be considered to represent the entire college student population. Moreover, the sample size was quite small, perhaps limiting the generalizability of the findings. Second, because of the treatment versus no-treatment design, it is possible that the results obtained were due to nonspecific factors such as attention or therapeutic influences rather than to the specific treatments components of CBT. Comparison studies between or among different treatments for BED should be conducted. Third, the impact of the present researcher on the results cannot be excluded because the treatment was performed by the researcher as a therapist. Fourth, the treatment was carried out during the summer vacation so it was hard to have all participants present at each session due to their personal affairs. Therefore, individual therapy for one or two participants was held each week, so the results do not exactly reflect the pure effects of the group therapy. Finally, the follow-up was not carried out with the NTC group but only with the CBT group. Furthermore, the 6-week follow-up was very brief, so it could not explore the long-term efficacy of the treatment. In order to check on the continued effects of the treatment, longer-term follow-ups (e.g., at 6- or 12 months) would be necessary in all groups including the no-participant treatment group, for

future studies.

There are several strengths of Study II. First, Study II selected BED-prone college students without inappropriate weight compensatory-behaviors as the participants. Previous studies in South Korea about BE have usually included BN-prone individuals with inappropriate weight compensatory behaviors. Future studies need to be conducted to compare the treatment effects between BED-prone and BN-prone individuals and explore how they differ after the same treatment. Second, this is a treatment study which is needed in order to verify the effects of treatment for Koreans. Third, the present study investigated secondary treatment outcomes such as changes in self-esteem, impulsivity, and social-discomfort that were significant or marginally significant. This suggests that treatment has efficacy not only for BE, the core symptom, but also for symptoms related to BED, other psychological variables, with participative and global improvements. Fourth, this study tried to evaluate the continued effects of the treatment, but the timing of the follow-up (6 weeks) was too short. Finally, the present study recommends a short version of CBT that is effective within 8 sessions.

## Discussion

Most problems in the contemporary society

have psychological disorders to a greater or lesser degree behind their exterior phenomena. Layard, in the newspaper *The Guardian* (2005), said "mental health is now the biggest social problem, bigger than unemployment and bigger than poverty." BED is one of the significant mental health issues of contemporary society. Many people are afraid to face difficulties and instead try to avoid them in unhealthy ways, and this may cause even bigger problems later. In the Korean community, in particular, there is a negative bias against "psychological disorders themselves" and against those who have a psychological disorder.

However, no one is free from some degree of psychological disorder over their lifetime. Since it is so easy to obtain food, especially instant food or fast food that does not require cooking at home, more people can suffer from BED by overeating as a method of releasing stress when they have unresolved distress or inner difficulties. Recurrent BE, therefore, is not a matter of one's control, as it is often viewed, but a psychological symptom that should be treated. Hence, knowledge about and understanding of the disorder, as well as open minds, is required in order to make access to treatment possible. Like those who have physical health problems, those who have psychological disorders should be treated with generosity and thoughtfulness. Otherwise, many people might go to a physical clinic for

treatment instead of a psychological clinic, even though they realize they have mental disorders. In the case of BED, for instance, many people try to receive weight-loss treatment or to remove sebum by a surgery rather than to get a psychological help. These approaches, however, are merely temporary expedients that are not appropriate for them, and the vicious circle of obesity keeps repeating itself. These patients are not in control of their BE.

The present study attempted to add some findings to the field of BED, one of the EDs, in order to understand BED more clearly and to recommend CBT as an effective treatment for it. In fact, participants in the CBT group reported that being with others who are like them and have the same problem, and having a good relationship with the therapist helped and comforted them. These positive effects on the participants imply that it is important for people with BED to get social support during the process of their overcoming the disorder. However, what they mentioned as the most important aspect of the treatment was their new understanding of the patterns of their cognitive thought, emotions and behaviors, and their ability to practice rational thinking and alternative ways of behaving through CBT treatment. Therefore, this study affirms the importance of both an accurate diagnosis and appropriate treatment for BED.

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## 폭식장애의 특성과 인지행동치료가 폭식장애 경향이 있는 대학생들에게 미치는 효과

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본 연구의 목적은 폭식장애의 심각성이 일반 비만과 상이함을 검증하고, 인지행동집단치료가 폭식장애 경향이 있는 대학생들에게 미치는 효과를 살펴보기 위한 것이다. 연구를 위해 사용된 척도들은 다음과 같다: 폭식척도, Rosenberg 자아존중감 척도, 사회적 불편감 척도, Baratt 충동성 척도 및 Dutch 식이 행동 질문지. 연구 1에서는 세 집단 (폭식장애가 있는 비만집단, 폭식장애가 없는 비만집단 및 통제집단)을 대상으로 심리적 문제 및 병리적 섭식 행동을 조사하였다. 비만인 피험자는 비만 치료센터에 있는 50명을 대상으로 설문지와 면접을 통해 폭식장애가 있는 비만집단과 폭식장애가 없는 비만집단에 각각 10명씩 선발하였다. 통제집단은 정상체중의 대학생 10명으로 구성되었다. 연구 결과에 따르면 폭식장애가 있는 비만집단이 다른 두 집단보다 더 심각한 심리적 문제 및 병리적 섭식 행동을 보고하였다. 대부분의 폭식장애 환자들이 치료를 받으려 할 때 심리치료가 아니라 체중조절 치료를 원한다. 그러나 본 연구는 비록 섭식장애가 비만인 전집에서 주로 발견됨에도 불구하고, 치료에 있어서 비만 그 자체보다는 먼저 병리적 섭식과 그와 관련된 심리치료에 초점을 맞춰야 함을 제안한다. 연구 2에서는 600명의 남녀 대학생 중에 폭식장애 경향이 있는 24명의 대학생을 인지행동치료집단과 대기통제집단에 각각 12명씩 무선 할당하였다. 8회기 동안의 치료 후에, 인지행동치료집단의 폭식행동이 대기통제집단에 비해 유의하게 감소되었다. 더욱이, 모든 심리적 변인들에 있어서 인지행동치료집단은 치료 전과 비교하여 유의하거나 적어도 부분적으로 유의한 효과를 나타냈으며 6주 후 추적조사 때는 더 향상된 결과를 보였다. 이러한 결과는 폭식장애가 있는 대학생을 위한 예방적 중재로써 인지행동치료의 효과를 지지한다. 한계점들이 있음에도 불구하고, 본 연구는 병리적 섭식 문제와 심리적 요인들에 있어서 섭식장애가 비만과 구별됨을 명확히 하고 폭식장애 경향이 있는 대학생들을 위한 효율적 치료로써 인지행동치료를 제안한다.

주요어: 폭식장애, 인지행동치료, 비만, 자아-존중감, 충동성, 사회적 불편감, 정서적 섭식