Efficacy of Cognitive Behavioral Therapy and Fluoxetine for the Treatment of Binge Eating Disorder: A Randomized Double-Blind Placebo-Controlled Comparison

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Background: *Cognitive behavioral therapy (CBT) and certain medications have been shown to be effective for binge eating disorder (BED), but no controlled studies have compared psychological and pharmacological therapies. We conducted a randomized, placebo-controlled study to test the efficacy of CBT and fluoxetine alone and in combination for BED.*

Methods: *108 patients were randomized to one of four 16-week individual treatments: fluoxetine (60 mg/day), placebo, CBT plus fluoxetine (60 mg/day) or CBT plus placebo. Medications were provided in double-blind fashion.*

Results: *Of the 108 patients, 86 (80%) completed treatments. Remission rates (zero binges for 28 days) for completers were: 29% (fluoxetine), 30% (placebo), 55% (CBT+fluoxetine), and 73% (CBT+placebo). Intent-to-treat (ITT) remission rates were: 22% (fluoxetine), 26% (placebo), 50% (CBT+fluoxetine), and 61% (CBT+placebo). Completer and ITT analyses on remission and dimensional measures of binge eating, cognitive features, and psychological distress produced consistent findings. Fluoxetine was not superior to placebo, CBT+fluoxetine and CBT+placebo did not differ, and both CBT conditions were superior to fluoxetine and to placebo. Weight loss was modest, did not differ across treatments, but was associated with binge eating remission.*

Conclusions: *CBT, but not fluoxetine, demonstrated efficacy for the behavioral and psychological features of BED, but not obesity.*

Key Words: Binge eating disorder, cognitive behavioral therapy, fluoxetine, randomized controlled trial, placebo, obesity

Binge eating disorder (BED) is characterized by recurrent binge eating without the compensatory weight control methods found in bulimia nervosa (American Psychiatric Association 1994). Binge eating is defined as eating an unusually large amount of food given the context coupled with a subjective sense of loss of control. Diagnostic criteria for BED includes a number of behavioral indicators that must be met to signify loss of control, and requires that the binge eating is associated with emotional distress, occurs regularly, and is persistent. BED is a prevalent and clinically significant public health problem (Spitzer et al 1993; Grilo 1998; National Task Force on the Prevention and Treatment of Obesity 2000). Patients with BED frequently suffer from multiple problems in addition to binge eating, including eating disorder psychopathology (various eating concerns, unhealthy restraint, overvalued ideas regarding weight and shape, and body image disturbance), psychological distress and psychiatric symptoms, and obesity (Grilo et al 2001a). Ideally, all of these associated problems would be addressed by effective treatments (Grilo 1998; Goldfein et al 2000).

Cognitive behavioral therapy (CBT) has demonstrated efficacy for BED in controlled studies (Carter and Fairburn 1998; Telch et al 1990; Wilfley et al 1993). These studies reported robust improvements in binge eating and most associated problems, except for obesity, that are superior to waitlist controls. Whereas CBT is regarded as the best-established intervention for BED (National Institute for Clinical Excellence 2004), studies have not employed a nonspecific treatment condition thus raising the question of treatment specificity (Wilfley et al 2002).

Several medications for BED have been tested in randomized placebo-controlled studies. Selective serotonin reuptake inhibitors, including fluoxetine (Arnold et al 2002), fluvoxamine (Hudson et al 1998), sertraline (McElroy et al 2000), and citalopram (McElroy et al 2003) have received the most attention, although studies have tested other classes of medication (Appolinario et al 2003; McElroy et al 2003; Stunkard et al 1996). Overall, these studies have reported statistically superior reductions in binge eating, but modest or equivocal findings for weight loss, relative to controls.

Thus, the treatment literature suggests that CBT and certain medications might have efficacy for BED. No double-blind placebo-controlled studies have directly compared CBT and pharmacotherapy therapies for BED, although two studies with obese binge eaters suggested that adding fluoxetine (Marcus et al 1990) or desipramine (Agras et al 1994) to behavioral treatments modestly enhanced weight loss. This study is a randomized double-blind placebo-controlled trial designed to test the efficacy of CBT and fluoxetine alone and in combination for BED.

Methods and Materials

Subjects

Participants were 108 consecutively evaluated adults who met DSM-IV (American Psychiatric Association 1994) research criteria for BED. Participants were required to be aged 18 to 60 years and between 100% and 200% of ideal weight for height, based on the 1959 Metropolitan Life Insurance Company Tables, a commonly used standard (Grilo and Brownell 1998). Exclusionary criteria included: any concurrent treatment for eating, weight, or psychiatric problems; medical conditions (diabetes, thyroid problems, hypoglycemia) that influence weight/eating; severe psychiatric conditions requiring different treatments (psychosis, bipolar dis-

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order); and pregnancy or lactation. The study received approval by the Yale University institutional review board. All participants provided written informed consent.

Four hundred and ten individuals were preliminarily screened for criteria and 200 passed screening and were scheduled for in-person assessments. The main reasons for the exclusion of the 210 potential participants during the preliminary screening were: absence of binge eating or unlikely to meet criteria for BED (n = 57), outside weight range (n = 27), purging behaviors (n = 18), known medical conditions influencing eating or weight, including diabetes and thyroid problems (n = 23), outside age range (n = 7), current treatments for psychiatric problems or for eating/weight concerns (n = 32), not interested given practical demands, including time commitment, duration or length of study, specific treatments to be tested, or transportation issues (n = 43), and pregnancy (n = 3).

Of these, 108 individuals met eligibility requirements based on completed assessments. The main reasons for the exclusion of 92 potential participants during the formal in-person evaluations were: failure to meet specific criteria for binge eating, including unusually large size, clear loss of control, or frequency and duration requirements (n = 24), medical conditions influencing eating or weight, including diabetes and thyroid problems determined by lab testing (n = 8), outside weight range when weighed (n = 9), failure to attend scheduled evaluations (n = 15), or not interested in participating given practical demands, including session scheduling, duration of study, specific treatments to be tested, or upcoming job or residence changes (n = 36). All 108 eligible participants were randomly assigned based on the order in which they were accepted into the study following completion of all assessment procedures. The 108 randomized participants were aged 21 to 59 years (mean = 44.0, SD = 8.6), 78% (n = 84) were female, 87% (n = 95) attended or finished college, and 89% (n = 96) were Caucasian. Mean body mass index (BMI; weight [kg] divided height [m^2]) was 36.3 [SD = 7.9]).

Diagnostic Assessment and Baseline Measures

Assessments were administered by trained doctoral-level research-clinicians. DSM-IV (American Psychiatric Association 1994) psychiatric and personality disorder diagnoses were based on the *Structured Clinical Interview for DSM-IV Axis I Disorders* (SCID-I/P; First et al 1996) and the *Diagnostic Interview for DSM-IV Personality Disorders* (DIPD-IV; Zanarini et al 1996), respectively. Inter-rater reliability for psychiatric disorders ranged from kappa (22) .57 to 1.0; kappa was 1.0 for BED and .77 for other lifetime eating disorder diagnoses. Inter-rater reliability for personality disorders ranged from kappa .58 to 1.0.

BED diagnosis by the SCID-I/P was confirmed on the Eating Disorder Examination Interview (EDE; Fairburn and Cooper 1993). The EDE, a semi-structured interview, was administered at baseline to assess the features of eating disorders. The EDE focuses on the previous 28 days except for diagnostic items, which are rated for additional duration stipulations. The EDE assesses the frequency of different forms of overeating, including objective bulimic episodes (OBEs; binge eating defined as unusually large quantities of food with a subjective sense of loss of control). The EDE assesses the frequency of OBEs as well as the number of days in which OBEs occurred for the previous month. The EDE is also comprised of four subscales: dietary restraint, eating concern, weight concern, and shape concern. The EDE has well-established inter-rater and test-retest reliability (Grilo et al 2004; Rizvi et al 2000) and validity (Rosen et al 1990). In this study, inter-rater reliability coefficients for OBE days and episodes were above .98.

Baseline and Repeated Measures

The following assessments were administered at baseline, monthly during treatment, and at post-treatment (i.e., after the final 16th week).

The Eating Disorder Examination - Questionnaire (EDE-Q; Fairburn and Beglin 1994), the self-report version of the EDE, generates the same overeating frequency data and the four subscales as the EDE. The EDE-Q has good reliability (Luce and Crowther 1999) and received empirical support for use with patients with BED (Grilo et al 2001b; Grilo et al 2001c).

The Three Factor Eating Questionnaire (TFEQ; Stunkard and Messick 1985) is an established measure (Allison et al 1992) with clinical utility for treatment studies (Foster et al 1998). The TFEQ has subscales reflecting three key eating domains: cognitive restraint, disinhibition, and hunger.

The Body Shape Questionnaire (BSQ; Cooper et al 1987) is a measure of body dissatisfaction (frequency of preoccupation and distress about body shape) with demonstrated reliability and validity (Rosen et al 1996).

The Beck Depression Inventory (BDI; Beck and Steer 1987) 21-item version is a well-established inventory of the symptoms of depression. Studies have reported adequate internal consistency, acceptable short-term test-retest reliability, and convergent validity (Beck et al 1998).

Self-Monitoring

Overeating behaviors, including OBEs, were assessed prospectively throughout the course of treatment by self-monitoring (Grilo et al 2001b; Grilo et al 2001c; Wilson and Vitousek 1999) using daily record sheets. Each daily record inquired specifically whether participants had experienced any overeating behaviors (including OBEs) and, if so, how many episodes. The daily record contained the definition of OBEs and other overeating behaviors (based on the EDE definitions) that was reviewed with participants beginning treatments. Each week, participants were provided with stapled packets of seven blank daily record sheets. Research-clinicians met briefly with participants each week to collect the records and to check for accuracy and completeness. At each meeting, participants were reminded of the importance of doing the self-monitoring on an on-going and daily basis. Compliance with the self-monitoring was 100% across participants while they remained active in treatment.

Randomization to Treatment Conditions

Participants were randomized to one of four treatment conditions (balanced 2-by-2 factorial design) for 16 weeks: 1) fluoxetine (60 mg/day); 2) placebo; 3) CBT plus fluoxetine (60 mg/day); or 4) CBT plus placebo. Participants were randomized (without any restriction or stratification) through a computer-generated table to one of the four treatments in blocks of eight to ensure approximately equal numbers of participants in the four treatments. The treatment assignment (randomization) was determined after completing all assessments and after acceptance into the study. To ensure concealment of the randomization, which was conducted independently of the investigators by a research pharmacist at a separate Yale facility, medication was provided in coded containers containing the identical-appearing capsules of fluoxetine or placebo supplied by the manufacturer.