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THE ASSESSMENT OF BINGE EATING SEVERITY AMONG OBESE PERSONS

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Abstract – The purpose of this study was to conduct an assessment of binge eating severity among obese persons. Two questionnaires were developed. A 16-item Binge Eating Scale was constructed describing both behavioral manifestations (e.g., eating large amounts of food) and feelings/cognitions surrounding a binge episode (e.g., guilt, fear of being unable to stop eating). An 11-item Cognitive Factors Scale was developed to measure two cognitive phenomena thought to be related to binge eating: the tendency to set unrealistic standards for a diet (e.g., eliminating "favorite foods") and low efficacy expectations for sustaining a diet. The results showed that the Binge Eating Scale successfully discriminated among persons judged by trained interviewers to have either no, moderate or severe binge eating problems. Significant correlations between the scales were obtained such that severe bingers tended to set up diets which were unrealistically strict while reporting low efficacy expectations to sustain a diet. The discussion highlighted the differences among obese persons on binge eating severity and emphasized the role of cognitions in the relapse of self control of eating.

Research on the development of assessment procedures for binge eating is important for several reasons. First, such information could be used to individualize obesity treatment. Without this assessment, a mismatch between the focus of treatment and the needs of the person might occur. For example, Wilson (1976) asserted that typical stimulus control procedures that he used were ineffective in the behavioral treatment of obese persons with binge eating problems. Second, changes in binge eating over the course of treatment could be measured. Finally, further research on the causes of binge eating could be pursued.

The assessement of binge eating is a complex matter. Recently the DSM-III(1979) included an attempt to define binge eating (labelled bulimia). The essential features of binge eating were identified as ingesting large amounts of food within short periods of time with accompanying fears about not being able to stop eating and depressive moods. However, no research has been reported which operationalized DSM-III criteria[1] to assess binge eating. Further, these criteria do not address severity of binge eating problems. Extreme cases, such as those cited by Stunkard (1959) indicate some persons can consume as much as 20,000 calories on a binge. It seems plausible that amount of food eaten, frequency of episodes and degree of emotionality can be used to describe severity levels. Another assessment problem results because different behaviors are used by different persons to characterize a binge. For example, a person can report feeling out of control after eating five cookies while another may not. Thus, the simple solution to assessment, self-reports of binge eating frequency, probably are confounded by subjectivity in defining a binge.

When are binges most likely to occur among obese persons? Two cognitive

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[1] Three of the following symptoms must be evident: rapid consumption of food during a binge; consumption of high caloric, easily ingested food during a binge; inconspicuous eating during a binge; termination of a binge episode by: abdominal pain, sleep, social interruption or self-induced vomiting; repeated attempts to lose weight by severely restrictive diets or self-induced vomiting; an eating pattern of alternate binges and fasts; use of cathartics for weight control.

phenomena, setting high standards for diets and low efficacy expectations to sustain a diet appear to be related to binge eating problems. Interestingly, several researchers have observed that binge eaters are immoderate in both directions: tending to lose control as well as fasting or using restrictive diets (Gormally, Rardin, & Black, 1980; Orbach, 1978; Wooley, Wooley, & Dyrenforth, 1979). While these papers are only suggestive, they all emphasized that binge eaters attempt to maintain a very high standard of control while on a diet, perhaps to compensate for overeating. Such standards are self-defeating. A person who promises never to eat a donut is only one bite away from violating their dieting standard.

Marlatt (1979) has proposed a cognitive process, called the abstinence violation effect (AVE), to explain the unraveling of control of addictive behaviors after a slip in self control occurs. The effect is characterized by guilt for having given into the urge and the tendency to attribute the slip to a personal weakness. Marlatt (1979) also asserts that low personal efficacy (Bandura, 1977) in high risk situations is most likely to lead to the AVE. For a dieter with binge eating problems, it makes sense that low efficacy expectations to sustain a diet may be related to the relapse of self control of eating urges.

The major purpose of this study was to design a self report measure that assessed the extent obese persons experienced binge eating problems. The scale appraised both the behavioral manifestations of a binge (e.g. eating in secret, overeating till nauseous) as well as feelings/cognition that cue or follow a binge (e.g. feelings of lack of control, guilt after a binge). To determine whether this instrument would be useful to assess binge eating, the scale scores were compared with independent assessments of binge-eating severity made by trained interviewers. The second purpose of the study was to examine whether cognitive phenomena were related to binge eating. The Cognitive Factors Scale was developed to assess both standard setting for diets and efficacy expectations about being able to sustain adherence to a diet. A factor analysis was conducted to examine whether both these cognitive variables emerged from the factor structure of the scale. We predicted that the severity of binge eating would be correlated with the Cognitive Factors Scale.

METHOD

Participants

Two samples of overweight persons seeking behavioral obesity treatment at two different settings were studied. The first sample (n = 65) were all female, ranging in age from 24 to 55 (M = 39.3, SD = 8.1) with an average pretreatment weight of 178.1 pounds (SD = 21.6). The second sample (n = 47) was comprised of 32 females and 15 males, aged between 24 and 67 (M = 41.2, SD = 11.6) with an average pretreatment weight of 209.9 pounds (SD = 40.3). The ideal weight norms from the Metropolitan Life Insurance tables were used to calculate percent overweight (current weight-ideal/ideal). The average percent overweight of sample 1 was 34.6% (SD = 12.0) and 48.9% (SD = 25.1) for sample 2. Both samples were almost entirely middle class and caucasian.

Measure development

Binge eating scales. The first step was specifying the characteristics of binge eating. These were derived from the authors' observations over five years during treatment of

binge eaters and from the DSM-III. The group of 16 characteristics included eight describing feelings/cognitions (e.g. guilt; preoccupation with restraint of eating) and eight behavioral manifestations (e.g. eating fast; eating in secret). The second step was the development of statements that reflect a range of severity for each characteristic. Then, these statements were independently assigned weights (0–3) by the authors (0 = indicates no binge eating problem; 3 = reflects severe binge eating problems). Differences among the authors were discussed and a final set of weights was derived. The scale is scored by summing the individual weights for the 16 items. High scores indicate more severe binge-eating problems. (See Appendix A for the Binge Eating Scale.)

The third step in scale development was to create an external criterion based on an objective judgment of binge eating severity, which could be compared with self reported binge eating problems. A structured interview was designed to determine severity of binge eating. The interviewer focused on overt behaviors during a recent overeating episode (amount of food eaten, etc.), emotions after the episode and general feelings of control of eating urges. The interviewers used three dimensions to rate severity: frequency, amount of food, degree of emotions surrounding a binge. Initially a four level severity scale was used, but the pilot testing showed it was difficult to reliably discriminate between mild and moderate binge eating problems.

The interviewers received five hours of rater training and a rater manual was devised to ensure that ratings were made reliably. Approximately half the participants in each sample were rated independently by a second interviewer to assess reliability. Interviewers discussed differences and came to a consensus rating. 100% of the ratings were within 1 point and 67% were in perfect agreement. Raters were confused by cases of persons who ate large amounts of food at meal time but reported no binge problems; we now view these persons as "indulgers" with no binge problem. During the rating, interviewers were unaware of the binge eating scale scores.

Cognitive factors scale. This scale appraised whether persons had unrealistically high dieting standards or low efficacy expectations for sustaining a diet. Eighteen items, using a 7-point Likert Scale, were developed and submitted to an item analysis; four were dropped to improve the internal consistency of the scale. A factor analysis was conducted on responses from 205 overweight persons seeking obesity treatment (25 males; 180 females) to show construct validity. A principle factoring with iterations, using a variance rotation, extracted two major factors. An item loading on the first factor (standards) was "When I start a diet, I say to myself that I will have absolutely no 'forbidden foods'." An item loading on the second factor (efficacy) was "I don't persist very long on diets I set for myself." Three items loading on a third minor factor were deleted, yielding a 11-item scale. High scores indicated that the participants adopted very restrictive standards for diets and felt incapable to sustain those diets.[2]

Procedure

Participants in both samples were self-referred for treatment of overweight. A month before participants began treatments, the Binge Eating Scale and Cognitive Factors Scale were administered and a structured interview was conducted. In the first sample, the interview was conducted before tests were administered, with the order reversed in the second sample. The two scales were administered in a random order.

[2] A copy of the Cognitive Factors Scale is available from the authors.

RESULTS

Binge eating scale scores

The average scale scores of the two samples were not significantly different, and actually quite similar (sample 1: $M = 20.8$, $SD = 8.4$; sample 2: $M = 21.4$, $SD = 9.2$). The scale scores from the females and males in sample 2 were also compared. The analysis of variance indicated that the males and females were not significantly different ($F = 2.61$, $df = 1,45$, N.S.).

Table 1 presents the scale scores of both samples for the interview-judged levels of severity. One-way analysis of variance computed on the scale scores indicated significant differences between levels for both samples (sample 1: $F = 13.48$, $df = 2,62$, $p < .001$; sample 2: $F = 25.13$, $df = 2,44$, $p < .001$. Newmann-Keuls post hoc tests showed that all the means were significantly different at $p < .01$ except non-significant differences between the first two severity levels of sample 1.

The Cognitive Factors Scale was significantly correlated with the Binge Eating Scale in both samples (sample 1: $r = .56$, $p < .001$; sample 2: $r = .53$, $p < .001$). The distributions of the scores on the Cognitive Factors Scale appeared normal and the means for samples were highly similar (sample 1: $M = 51.8$, $SD = 12.9$; sample 2: $M = 51.6$, SD 12.2). The internal consistency of the scale was moderately high ($\alpha = .85$).

The relationship between degree of obesity and binge eating severity was also examined. Binge eating scale scores were uncorrelated with percentage overweight in both samples (sample 1: $r = .17$; sample 2: $r = .18$). Thus, serious binge eating is not associated with more obesity.

Internal consistency of the binge eating scale

Internal consistency of the scale was determined by comparing the respondents' total scale scores, grouping the scores based on which weighted statement was endorsed. For example, for item one, total scale scores of persons endorsing statement one or two (both weighted 0) were compared with those endorsing statement three (weighted 1) and statement four (weighted 3). Internal consistency would be demonstrated by those endorsing statement four having the highest scores followed by those endorsing statement three, with the lowest total scores for those endorsing one or two. Kruskal-Wallis analysis of variance of ranked data was used to compare the groups of scores, using the 65 cases from sample 1. All the X^2 tests of significance for the 16 items were above 9.1 ($p < .01$) and in each case, except item 12, those with highest ranks were obtained for

Table 1. Binge eating scale scores for the three severity levels

	Level of Severity					
	None		Moderate		Severe	
Sample	*M*	*S.D.*	*M*	*S.D.*	*M*	*S.D.*
1	14.9	8.2	19.6	6.7	28.9	7.5
($n = 65$)	($n = 11$)		($n = 40$)		($n = 14$)	
2 Total	13.4	5.2	21.1	7.0	31.3	6.6
($n = 47$)	($n = 14$)		($n = 21$)		($n = 12$)	
Males	14.4	4.9	17.5	4.1	26.0	8.0
($n = 15$)	($n = 7$)		($n = 4$)		($n = 4$)	
Females	12.4	5.6	22.0	7.4	34.0	3.9
($n = 32$)	($n = 7$)		($n = 17$)		($n = 8$)	

those endorsing the highest weighted statement, and so forth. For item 12, those endorsing statement three had higher ranked total scores than for those endorsing statement four. Since only two persons endorsed statement three, there did not appear adequate justification to change the weights for item 12.

DISCUSSION

The major purpose of this study was to develop an instrument to assess binge eating problems among obese persons. A questionnaire was shown to be useful in distinguishing levels of binge-eating severity; the scale also appears to have high internal consistency. In addition, a measure describing unrealistically high standards for diets and low personal efficacy to sustain a diet was found to be related to binge eating.

Based on the responses to the binge-eating scale, it appears that persons seeking obesity treatment do vary in the extent they report behaviors/feelings characteristic of binge eating. The majority of the participants (55%) were judged by the interviewers as having moderate problems with binge eating, while 22% appeared to have little or no problem and 23% had very serious problems. Those who report no binge eating state that they can control food urges and that they overeat because they enjoy eating. These persons appear to indulge themselves frequently. The major difference between moderate and severe binge eaters is the degree of self control of eating urges—severe bingers feel a complete lack of control leading to a constant struggle to avoid a binge. Moderate binge eaters report more episodic periods of poor control and often feel able to exert appropriate restraint over their eating urges. Another notable difference between the three groups was the emotional consequences of overeating. Severe binge eaters react to their loss of control with extreme guilt and self-hate, while moderate bingers appeared more tolerant to their lapses. The non-bingers reported little emotional response to their overeating, which may be a function of their view of overeating as doing something enjoyable rather than losing control.

The strong relationship between the Cognitive Factors Scale and the Binge Eating Scale provides support for extending Marlatt's (1979) cognitive model of relapse to binge eating (cf. Cummings, Note 1). The influence of cognition upon the self control of eating may be conceptualized the following way. High dieting standards accompanied by low personal efficacy tends to increase the likelihood of a slip in control when a person confronts a "high risk" situation. Instead of coping with a dieting slip-up with a problem-solving attitude, the binge eater attributes the lapse of control to a lack of willpower. This leads to a complete unraveling of control and a binge. Not only do high standards and low efficacy increase the likelihood of a binge but also, the binge can reinforce the belief that even stricter controls are needed.

Paradoxically, it seems that standards which are too high, rather than too low, leads to a binge. Hawkins and Clement (1980) also concluded that excessive control of eating urges is likely to trigger a binge. One binge eater typified this cognitive problem. She would say "Today will be a perfect dieting day." She broke this promise so often, she knew she would not keep it. High standards are self defeating when a person feels little sense of personal efficacy to follow them.

What are the treatment options for the maladaptive thoughts of binge eaters? A skills training approach, similar to that advocated by Marlatt for problem drinkers, might be designed to help modify faculty thinking (i.e., rigid standards; will-power attributions) of binge eaters. This cognitive modification training (cf. Mahoney & Mahoney, 1976) could be incorporated with nutritional counseling, to help avoid setting-up diets which are too depriving. Clinically, we have observed that treatment

aimed at loosening excessive controls actually has helped promote increased feelings of personal efficacy. Another treatment approach called Overeaters Anonymous has been developed based on very different assumptions. The treatment is a self-help approach derived from the Alcoholic Anonymous model, and encourages group members to adopt a belief that they are powerless to control inappropriate eating urges. The program also includes the use of a "food-sponsor," a fellow group member who helps the participant plan their meals each day. Here, the person is encouraged to use external control both behaviorally, through food sponsors, and cognitively, by belief in a higher power to strengthen a person's weak will. More individualized obesity treatment to meet the unique needs of binge eaters does appear justified, yet specific methods need to be further studied.

While obese persons were of interest in this paper, several important diagnostic questions pertain to other groups. Bruch (1978) claimed that anorexics frequently engage in eating binges. What are similarities and differences of binge eating for obese vs. anorexic persons? Do normal weight persons engage in eating binges? Does the binge eating of bulimarexics, observed among college-aged females, represent an early sign of an obesity-prone individual?

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APPENDIX A: BINGE EATING SCALE

Note. The scoring weights are in parentheses next to each statement. Total scale score is the sum of the weights for the 16 items.

Eating habits checklist

Instructions. Below are groups of numbered statements. Read all of the statements in each group and mark on this sheet the one that best describes the way you feel about the problems you have controlling your eating behavior.

#1

(0) 1. I don't feel self-conscious about my weight or body size when I'm with others.
(0) 2. I feel concerned about how I look to others, but it normally does not make me feel disappointed with myself.
(1) 3. I do get self-conscious about my appearance and weight which makes me feel disappointed in myself.
(3) 4. I feel very self-conscious about my weight and frequently, I feel intense shame and disgust for myself. I try to avoid social contacts because of my self-consciousness.

#2

(0) 1. I don't have any difficulty eating slowly in the proper manner.
(1) 2. Although I seem to "gobble down" foods, I don't end up feeling stuffed because of eating too much.
(2) 3. At times, I tend to eat quickly and then, I feel uncomfortably full afterwards.
(3) 4. I have the habit of bolting down my food, without really chewing it. When this happens I usually feel uncomfortably stuffed because I've eaten too much.

#3

(0) 1. I feel capable to control my eating urges when I want to.
(1) 2. I feel like I have failed to control my eating more than the average person.
(3) 3. I feel utterly helpless when it comes to feeling in control of my eating urges.
(3) 4. Because I feel so helpless about controlling my eating I have become very desperate about trying to get in control.

#4

(0) 1. I don't have the habit of eating when I'm bored.
(0) 2. I sometimes eat when I'm bored, but often I'm able to "get busy" and get my mind off food.
(0) 3. I have a regular habit of eating when I'm bored, but occasionally, I can use some other activity to get my mind off eating.
(2) 4. I have a strong habit of eating when I'm bored. Nothing seems to help me break the habit.

#5

(0) 1. I'm usually physically hungry when I eat something.
(1) 2. Occasionally, I eat something on impulse even though I really am not hungry.
(2) 3. I have the regular habit of eating foods, that I might not really enjoy, to satisfy a hungry feeling even though physically, I don't need the food.
(3) 4. Even though I'm not physically hungry, I get a hungry feeling in my mouth that only seems to be satisfied when I eat a food, like a sandwich, that fills my mouth. Sometimes, when I eat the food to satisfy my mouth hunger, I then spit the food out so I won't gain weight.

#6

(0) 1. I don't feel any guilt or self-hate after I overeat.
(1) 2. After I overeat, occasionally I feel guilt or self-hate.
(3) 3. Almost all the time I experience strong guilt or self-hate after I overeat.

#7

(0) 1. I don't lose total control of my eating when dieting even after periods when I overeat.
(2) 2. Sometimes when I eat a "forbidden food" on a diet, I feel like I "blew it" and eat even more.
(3) 3. Frequently, I have the habit of saying to myself, "I've blown it now, why not go all the way" when I overeat on a diet. When that happens I eat even more.
(3) 4. I have a regular habit of starting strict diets for myself, but I break the diets by going on an eating binge. My life seems to be either a "feast" or "famine."

#8

(0) 1. I rarely eat so much food that I feel uncomfortably stuffed afterwards.
(1) 2. Usually about once a month, I eat such a quantity of food, I end up feeling very stuffed.
(2) 3. I have regular periods during the month when I eat large amounts of food, either at mealtime or at snacks.
(3) 4. I eat so much food that I regularly feel quite uncomfortable after eating and sometimes a bit nauseous.

#9

(0) 1. My level of calorie intake does not go up very high or go down very low on a regular basis.
(1) 2. Sometimes after I overeat, I will try to reduce my caloric intake to almost nothing to compensate for the excess calories I've eaten.
(2) 3. I have a regular habit of overeating during the night. It seems that my routine is not to be hungry in the morning but overeat in the evening.
(3) 4. In my adult years, I have had week-long periods where I practically starve myself. This follows periods when I overeat. It seems I live a life of either "feast or famine."

#10

(0) 1. I usually am able to stop eating when I want to. I know when "enough is enough."
(1) 2. Every so often, I experience a compulsion to eat which I can't seem to control.
(2) 3. Frequently, I experience strong urges to eat which I seem unable to control, but at other times I can control my eating urges.
(3) 4. I feel incapable of controlling urges to eat. I have a fear of not being able to stop eating voluntarily.

#11

(0) 1. I don't have any problem stopping eating when I feel full.
(1) 2. I usually can stop eating when I feel full but occasionally overeat leaving me feeling uncomfortably stuffed.

(2) 3. I have a problem stopping eating once I start and usually I feel uncomfortably stuffed after I eat a meal.
(3) 4. Because I have a problem not being able to stop eating when I want, I sometimes have to induce vomiting to relieve my stuffed feeling.

#12
(0) 1. I seem to eat just as much when I'm with others (family, social gatherings) as when I'm by myself.
(1) 2. Sometimes, when I'm with other persons, I don't eat as much as I want to eat because I'm self-conscious about my eating.
(2) 3. Frequently, I eat only a small amount of food when others are present, because I'm very embarrassed about my eating.
(3) 4. I feel so ashamed about overeating that I pick times to overeat when I know no one will see me. I feel like a "closet eater."

#13
(0) 1. I eat three meals a day with only an occasional between meal snack.
(0) 2. I eat 3 meals a day, but I also normally snack between meals.
(2) 3. When I am snacking heavily, I get in the habit of skipping regular meals.
(3) 4. There are regular periods when I seem to be continually eating, with no planned meals.

#14
(0) 1. I don't think much about trying to control unwanted eating urges.
(1) 2. At least some of the time, I feel my thoughts are pre-occupied with trying to control my eating urges.
(2) 3. I feel that frequently I spend much time thinking about how much I ate or about trying not to eat anymore.
(3) 4. It seems to me that most of my waking hours are pre-occupied by thoughts about eating *or* not eating. I feel like I'm constantly struggling not to eat.

#15
(0) 1. I don't think about food a great deal.
(1) 2. I have strong cravings for food but they last only for brief periods of time.
(2) 3. I have days when I can't seem to think about anything else but food.
(3) 4. Most of my days seem to be pre-occupied with thoughts about food. I feel like I live to eat.

#16
(0) 1. I usually know whether or not I'm physically hungry. I take the right portion of food to satisy me.
(1) 2. Occasionally, I feel uncertain about knowing whether or not I'm physically hungry. At these times it's hard to know how much food I should take to satisfy me.
(2) 3. Even though I might know how many calories I should eat, I don't have any idea what is a "normal" amount of food for me.